This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

1 C 32267.1

Harvard College Library

FROM

Frank William Taussig

F. W. TAUSSIG,
CAMBRIDGE,
MASS.

THE WONDERS OF THE COLORADO DESERT

VOLUME TWO

Photo. by H. C. Tibbitts, San Francisco, Cal.

PALMS AT INDIO ON THE COLORADO DESERT

The Wonders

of

the Colorado Desert

South California

[illegible]

[illegible]

BY GEORGE WHARTON JAMES

[illegible]

[illegible]

CAPE TYPE

IN TWO VOLUMES

Vol. II.

Boston
Little, Brown, and Company
1906

The Wonders

of

The Colorado Desert

(Southern California)

Its Rivers and its Mountains, its Canyons and its Springs, its Life and its History, Pictured and Described

Including an Account of a Recent Journey made down the Overflow of the Colorado River to the Mysterious Salton Sea

By GEORGE WHARTON JAMES

Author of "In and Around the Grand Canyon," "The Old Missions of California," etc.

With upwards of Three Hundred Pen-and-Ink Sketches from Nature, by

CARL EYTEL

IN TWO VOLUMES

Vol. II.

Boston
Little, Brown, and Company
1906

LC 38263.2

HARVARD COLLEGE LIBRARY
OCT
FRANK

Copyright, 1906,
Edith E. Farnsworth.

All rights reserved

Published December, 1906

Typography by Griffith-Stillings Press, Boston, U.S.A.

CONTENTS

Volume Two

Chapter		Page
XVIII.	Dr. Widney's Plan for Reflooding the Colorado Desert	271
XIX.	Palm Springs; An Oasis on the Desert	277
XX.	Prospecting and Mining on the Desert	299
XXI.	Sign-boards on the Desert	331
XXII.	The Tragedies of the Desert	337
XXIII.	The Camp-fires of the Desert	345
XXIV.	The Reclamation of the Desert, in the Imperial and Coachella Valleys	353
XXV.	Horticultural Possibilities of the Desert	373
XXVI.	Date-Palm Culture on the Desert	383
XXVII.	The Burro on the Desert	397
XXVIII.	A Tramp from San Diego to Yuma	403
XXIX.	A Tramp from Yuma up the Colorado River to Palo Verde, then by the Chuckwalla Trail to Salton	415
XXX.	Out to the Brooklyn and Granite Mines	429
XXXI.	Up Martinez Canyon, into Coahuilla Valley and back by Warner's Ranch and Carrizo Creek	437
XXXII.	Through Mesquite Land	453
XXXIII.	From Pines to Palms	463
XXXIV.	A Pasear from the Garden of Eden by way of Morongo Pass and Twenty-Nine Palms to Indio	473
XXXV.	From Yuma, down the Overflow of the Colorado to the Salton Sea	487

Chapter		Page
XXXVI.	The Salton Sea and Its Mystery	503
XXXVII.	What the Desert Offers to the Invalid	519
XXXVIII.	Suggestions for the Desert Tenderfoot.	521
XXXIX.	The Lure of the Desert	527

FULL-PAGE ILLUSTRATIONS

Volume Two

Palms at Indio, Colorado Desert	*Frontispiece*	
Palm Springs, Colorado Desert	*Page*	288
On the Edge of a "Playa," Colorado Desert	"	300
A "Playa" on the Colorado Desert	"	312
The Salton Basin and the Salt-works before the rising of the Salton Sea	"	324
About to take a Sail on a "Playa" on the Colorado Desert	"	332
Cutting Alfalfa on the Colorado Desert	"	353
Watermelons growing at Coachella on the Colorado Desert	"	364
Grape-vines growing at Coachella on the Colorado Desert	"	374
Orchard on the Colorado Desert	"	382
The Alamo River conveying the Overflow Water of the Colorado to the Salton Sea, approaching Sharps	"	486
On the Alamo, Two Days from the Salton Sea	"	494
"Van" and his Pack after walking from the Boat on the Salton Sea	"	500
Colorado River pouring in at the "Cut"	"	504
The Dry Bed of the Colorado River just below the "Cut"	"	510
On Pelican Island, the Salton Sea	"	516
Building the Concrete Dam on the Colorado River, Intake No. 1	"	518

ILLUSTRATIONS IN THE TEXT

Volume Two

Indian Woman carrying a Load	*Page*	272
A Rustic Gateway	"	275
The Palm Springs Station	"	277
Dr. Murray's Hotel at Palm Springs as it appeared Twenty Years ago	"	278
Dr. Murray's Hotel at Palm Springs as it appears To-day	"	279
Cottage of Palm Leaves at Palm Springs	"	280
Palm Springs Store	"	281
The McCallum Ranch-house, Palm Springs	"	282
On the Line of Flume bringing the Whitewater to Palm Springs	"	283
The Stone Ditch bringing the Whitewater to Palm Springs	"	284
Residence in Palm Springs	"	285
Schoolhouse at Palm Springs	"	286
Tent Life at Palm Springs	"	287
Tenter hauling Water at Palm Springs	"	287
House over Hot Spring at Palm Springs	"	288
Palm-leaf Sandals	"	289
Pedro	"	289
Indian Graves at Palm Springs	"	290
A Relic of the Palmdale Railroad	"	291
The Deserted Village of Rincon	"	292
Hidden Ollas, Rincon	"	293
The Entrance to Andreas Canyon	"	294
Hidden Mortar at the Deserted Village of Rincon	"	295
Where Chief Andreas lived in Andreas Canyon	"	296
Waterfall in Andreas Canyon	"	297
Palms, Andreas Canyon	"	297
Looking from the Ridge into Andreas and Murray Canyons	"	298
A Hobbled Burro	"	300

The Trusty Pack-saddle	*Page*	302
The Trusty Burro's Load	"	303
Prospector on the March	"	304
The Pack-burro fording a Stream	"	306
Pete McGuire	"	308
Resting after the Day's Work	"	310
Burros Rolling	"	313
An Old Prospector	"	316
Picacho (the Peak) and Picacho Mining Camp	"	321
Plowing Salt in the Salton Sea	"	323
The New Liverpool Salt-Works	"	324
Station at Indio	"	327
Arrow-heads	"	329
One of Supervisor Jasper's Guide-posts	"	332
Old Cave Dwelling in Tauquitch Canyon	"	334
On the Trail to San Jacinto Peak	"	336
A Coahuilla Basket	"	338
Fig Tree at Palm Springs	"	340
A Turn in Palm Canyon	"	342
In Palm Canyon	"	343
A Coahuilla Basket Maker	"	348
A Coahuilla Basket	"	351
Headquarters of California Development Company, Calexico	"	355
Main Canal, near Imperial	"	359
Typical Ranch-house in Imperial Valley	"	360
Flume carrying the Canal over New River	"	360
An Imported Galloway Bull on the Desert	"	362
Cattle in the Imperial Valley	"	363
On the Main Canal, Imperial	"	365
Irrigation in Imperial Valley	"	368
"Hidden Lake," on the Edge of a Mountain Ridge	"	372
Signal Mountain at New River	"	374
Dr. Murray's Orange Grove at Palm Springs	"	375
Head of Milo Maize	"	376
Milo Maize	"	376
Sugar Cane growing in Imperial Valley	"	377

On the Main Canal, Imperial Valley . . . . . *Page* 378
One of the Lateral Canals, Imperial Valley . . . . . " 379
A Drop in the Main Canal . . . . . " 380
California Development Company's Barn and Water Tower at Calexico . . . . . " 382
Palms in the Foot-hills near Indio . . . . . " 384
All that remains of Seven Palms . . . . . " 386
Twenty-Nine Palms . . . . . " 387
Clusters of Dates on a Wild Palm . . . . . " 388
The Experimental Date Farm at Mecca . . . . . " 390
Palms at Hanlon Ranch . . . . . " 392
On the Trail up Palm Canyon . . . . . " 394
Palms in the Foot-hills near Indio . . . . . " 395
Our Three Burros . . . . . " 398
Jennie . . . . . " 399
Throwing the Diamond Hitch . . . . . " 401
Burro's Lunch Time . . . . . " 402
El Campo . . . . . " 404
Ruins in Hill's Valley . . . . . " 405
Ranch-house at Jacumba . . . . . " 406
From the Mountains to the Desert . . . . . " 407
Coyote Well, on Road between San Diego and Yuma . . " 409
Blue Lake, Imperial Valley . . . . . " 410
Indian Wells near Silsbee . . . . . " 411
Where Five Canals meet in Imperial Valley . . . . . " 412
Cookes Wells . . . . . " 412
On the Line below Pilot Knob . . . . . " 414
Boundary Mountain near Calexico . . . . . " 414
Yuma Indian carrying Water . . . . . " 416
A Yuma Indian's Pipe . . . . . " 416
A Street in Old Yuma . . . . . " 417
The Town of Palo Verde . . . . . " 418
North Palo Verde Mining Camp . . . . . " 420
Brush Schoolhouse at Palo Verde . . . . . " 420
McFee's Ranch . . . . . " 421
Ehrenberg . . . . . " 422
Ehrenberg from the Colorado River . . . . . " 423

Graveyard at Ehrenberg . . . . . *Page* 423
Brown's Ranch, near the Colorado River . . . . . " 424
Chuckwalla Storehouse . . . . . " 425
Chuckwalla Well . . . . . " 425
Dos Palmas . . . . . " 426
A Mill for making Adobe Brick . . . . . " 428
Starting on a Trip . . . . . " 430
Reaching the Desert from Cottonwood Canyon . . . . . " 433
San Jacinto Peak . . . . . " 436
In the Martinez Sand-wash . . . . . " 438
Wild Cactus on the Martinez Trail . . . . . " 439
A View of the Desert from the Ridge above Rock House Canyon . . . . . " 440
A Glimpse of the Salton Sea from the Martinez Trail . . " 442
The Vandeventer Ranch . . . . . " 443
Oak Grove Ranch-house, once a Stage-station . . . . . " 444
The Main Street at Agua Caliente, Warner's Ranch . . " 445
Old Stage-station at Warner . . . . . " 446
San Felipe River . . . . . " 446
Ruins of Carrizo Stage-station . . . . . " 447
General Cooke's Pass . . . . . " 448
Sand Sculptures on the Desert . . . . . " 450
Dos Alamos . . . . . " 451
Near Indian Well . . . . . " 454
In Cathedral Canyon . . . . . " 455
Cave-dwelling of Indians, Andreas Canyon . . . . . " 457
In Chapel Canyon . . . . . " 458
Falls in Deep Canyon . . . . . " 459
Large Falls in Deep Canyon . . . . . " 460
Chollas on Desert . . . . . " 461
The Thomas Ranch among the Pines . . . . . " 464
Murray Butte, in Palm Canyon . . . . . " 467
On the Palm Canyon Trail . . . . . " 468
On the Trail up Palm Canyon . . . . . " 469
Old Stage-station at Palm Springs . . . . . " 470
On the Morongo Pass Road . . . . . " 471
Garden of Eden . . . . . " 473

Indian Ollas . . . . . *Page* 474
The Toutain Ranch, Whitewater Canyon . . . . . " 474
The Morongo Pass . . . . . " 475
Old Gold Wheel . . . . . " 475
The Devil's Garden . . . . . " 476
Entering the Morongo Pass . . . . . " 478
Butchering Appliances . . . . . " 479
At Twenty-Nine Palms . . . . . " 480
Wilson's House . . . . . " 481
Working the Arastra at Twenty-Nine Palms . . . . . " 481
"Horning" for Gold . . . . . " 482
Preparing the Ore for "Horning" . . . . . " 482
Pinnacles at Entrance to Pinion Canyon . . . . . " 484
Old Arastra at Twenty-Nine Palms . . . . . " 486
On the Alamo River . . . . . " 488
Mountain Springs . . . . . " 489
Colorado River Steamer . . . . . " 490
On the Main Canal, Imperial Valley . . . . . " 491
The Desert Traveler's Way of making Biscuit . . . . . " 493
A Boating Paradise, near Calexico . . . . . " 494
Cameron Lake before the 1906 Flood . . . . . " 496
Resting on the Edge of the Salton Sea . . . . . " 499
A Side Gorge in the San Jacinto Range . . . . . " 502
Stone Corrals at Mountain Springs . . . . . " 506
The March of the Salton Sea . . . . . " 515
The Pelicans of Pelican Island, Salton Sea . . . . . " 516
Nesting Pelicans, Pelican Island, Salton Sea . . . . . " 517
Indian School in Banning Reservation . . . . . " 526

MAPS AND DIAGRAMS

Diagram indicating Sign-posts erected on the Colorado Desert, Riverside County, California . . . . . *Page* 330
Map of Southern California and the Imperial Valley . . " 356
Statement of Tonnage moving off the Imperial Branch of the Southern Pacific Railway, during the year 1905 . " 364
Table showing Distribution of Growers in Weekly Pools . " 371
Diagram No. 1, showing Location of the different Canal Intakes . . . . . " 510
Diagram No. 2, showing Location of the different Endeavors to turn the Waters of the Colorado River . . " 511
Table showing Minimum, Maximum, and Mean Temperatures, Rain Precipitation, and Direction of Prevailing Winds at Indio and Salton, on the Colorado Desert, for the past Twelve Years . . . *Between pages* 502, 503

The Wonders of the Colorado Desert

CHAPTER XVIII

Dr. Widney's Plan for Reflooding the Colorado Desert

N the year 1873, Dr. J. P. Widney, now of Los Angeles, then an army surgeon who had spent two years in Arizona and had made two careful explorations of the desert, published in the *Overland Monthly* an elaborate and carefully prepared article in which he sought to demonstrate that great climatic changes had occurred in the regions adjacent to the desert owing to the drying up of the inland sea that once covered the area of the desert, and that, if this desert were again flooded, such beneficent climatic results would return again. He claims that simultaneously with the drying up of the great shut off portion of the gulf that made the Salton Basin, a great climatic change occurred in the surrounding territory including Southern California; the change being marked by a decided and rather sudden increase of aridity.

As there is no other apparent cause for this climatic change he raised the important question as to whether these two apparently coincident transformations should not be looked upon as cause and effect. In support of this view he adduced two readily discernible factors as follows: "What would be the logical result of

the transformation into dry land of so large a portion of the ancient gulf? An area one hundred eighty miles in length by an average of at least thirty miles in width has ceased to be covered by water, and has become a parched, heated desert. The yearly evaporation in the Bay of Bengal, as shown by the published proceedings of the 'Bombay Geographical Society,' is more than sixteen feet. This portion of the gulf, which is surrounded by high mountains, reflecting the sun from their bare sides, shut off from the cool winds of the ocean, its waters shallow and easily heated, must have been a steaming caldron, keeping the air-currents above constantly saturated with moisture. This evaporation, however, estimated at the rate before given, would be enough, if all recondensed and precipitated, to supply twelve inches of rain to 86,400 square miles — more than double the area of the state of Ohio. Again, that evaporation involves the rendering of a vast amount of active heat latent. This would lower the temperature of all the adjacent territory. Fort Yuma, at the south end of the desert, upon the Colorado River, has, for days at a time, a temperature of 120°. When the desert was covered by the sea the heat must have been lower by a number of degrees. This lowering of the temperature alone, apart from any increase of moisture in the air, would add to the rainfall, by increasing the condensation of vapor already brought by the rain-currents from farther south. The augmented dampness of the atmosphere and the consequent fall of temperature would have another effect. Such rain as had fallen over the adjacent country would be less quickly dried up, by giving a moister soil and more numerous springs and streams of water. It is not probable that Western Arizona, the Mohave Desert, and the mountains surrounding the Colorado Desert were ever sufficiently well watered for any general system of agriculture, but it is probable that there was enough moisture to supply forests where none now exist, to feed innumerable streams for irrigation where now the channels are dry

Indian woman carrying a load

except after an occasional storm, and to support an annual growth of grass for grazing where now are barren wastes."

The other factor he presents as follows: "Any one who has resided a few years in the Los Angeles and San Bernardino valleys cannot have failed to notice and execrate the baffling west wind that so often breaks up the storm-current from which refreshing rain is hoped. A southeaster sets in, blows for several days, clouds gather loweringly upon the mountains, and the parched earth waits for the cooling shower. But suddenly the storm-drift checks, the west wind comes rushing in, there is an angry commotion in the upper air, and the clouds, baffled and beaten, are driven back, carrying with them their precious moisture, through the mountain passes to the interior. This especially happens in the evening, the time for the full strength of the daily sea-breeze, and so repeatedly that the plaintive remark is often heard, 'If only our rain-current will continue until the turn of the evening, we shall escape the west wind, and then we are certain of another day's rain.' What is the cause of this interruption? Simply this: back of those mountains is the desert. All day it is heating up with the sun. When afternoon comes, it is probably 40° hotter than the ocean on the west. Then the cold sea air rushes in through every break in the mountain chain, to take the place of this rarified atmosphere, forcing back with it the clouds, whose moisture is quickly dissipated by the scorching breath of the sands. So constant and powerful is this wind-current that the trees in the San Gorgonio Pass are all blown from the perpendicular, and slant toward the east.

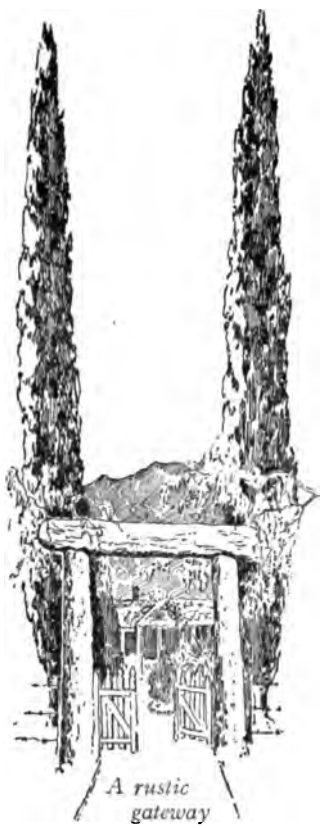
"The same warring of winds is seen again in the months of July and August. Los Angeles, San Bernardino, and San Diego Counties are really within the circuit of the Sonora summer rains. Again comes the southeast wind but more gently than in the winter. Now it seems to follow rather up the course of the gulf, and from there passes over westward. Again the clouds gather upon the mountain-tops. Light showers fall, even heavy rains, in the San Bernardino Mountains. Thunder and lightning are frequent. But the disturbing influence of the Colorado Desert again makes itself felt. In winter it was hot. Now it is a fiery furnace. It glows and warms with ever-increasing heat; without water, with-

out life. Day knows no respite; night brings no freshness — 120°, even 130° are recorded. The rains have trailed up the gulf. They have refreshed Sonora and Lower California. Arizona has grown green. They have followed the Colorado River far to the north. They have even turned the upper end of the Colorado Desert, and sent occasional floods upon the higher and cooler Mohave Desert and in the mountains about Tehachepi. They have gone to the south of the great fertile plains of Los Angeles and San Bernardino; they have skirted the western edge of Arizona, back of them; they have doubled around and spent their strength upon the mountains north of them. Why have these rains thus gone all around the only extensive fertile portion of Southern California and yet avoided it as a forbidden land? Because, to reach it, they must cross the Colorado Desert, and its fiery breath is to them the blast of death. Should they cross it, should other rain-currents follow up the coast from the south, the cold wind of the ocean, rushing in to displace the overheated air of the desert, beats them back, and so the land has no rain."

Dr. Widney then proceeds to show that could the desert be refilled with water — converted from dry, hot sand to an inland lake — the very heat which is reflected from the barren mountain-sides around would be a power of good instead of evil. "The constant evaporation would render heat latent which is now active, thus lowering the annual temperature very perceptibly. This lowering of temperature alone, even if unaccompanied by an increase of moisture in the air, would give a greater rainfall by the more perfect condensation which it would cause. But the evaporation from the surface of the lake would materially augment the supply of vapor in the rain-currents, thus acting in a double manner — a decrease of temperature and an increase of moisture for precipitation. These rain-currents would also meet with less difficulty in making their way against the ocean winds — as these winds, caused largely by the heat of the desert, would be less violent — and would therefore with more certainty and regularity deposit their supply of moisture over the plains of Los Angeles, San Bernardino, and San Diego. When it is considered that every additional inch of rain is worth millions of dollars to these southern counties, the value of such a change in quantity and certainty of fall may be appreciated.

"The difference in the summer climate would be especially marked. The flood season of the Colorado River is from April to September. The flood is caused by the melting of the snows in the Rocky Mountains, where the river has its source.

"The water still retains much of its coolness when it reaches the gulf. The lake in the desert would be at its highest, filled with cold snow-water, just in the hottest portion of the year. All the influences at work to modify the winter rain would now act with double power, and the summer rains would probably become as reliable in the mountains of Southern California as they now are in the mountains of Arizona. Streams which are used for irrigation would have their flow augmented; other streams which now only furnish water in the winter would become permanent during the year. The grazing lands in the mountains and among the foot-hills would furnish a much more abundant and certain pasturage. The hot, dry winds which now come, at times, from the desert, scorching vegetation, would be cool and laden with vapor."



A rustic gateway

In a later article Dr. Widney showed that it was probable that the flow of water from the Colorado River would not fill the whole of the desert basin, but only the low salt-desert northern portion, thus not only not interfering with the reclamation of the fertile alluvial plain sloping from the south (what is now the Imperial Valley) by irrigation, but really assisting by destroying the desiccating winds which sweep across it from the north, heated and parched by the desert sands of the lower basin.

There is no denying the great power of Dr. Widney's deductions and argument, and had the project been carried out before so much of the land below sea-level was occupied by farms and had become the site of cities it would have been, to say the least, a noteworthy experiment well worth trying by an enlightened government. Unfortunately it was not done. Now it is too late. Much of the northern basin is occupied by ranches and towns. Mecca, Thermal, Coachella, Indio, and all their well-tilled adjacent territory would have to be abandoned, and unless some method were designed to keep out the water from the lower basin — the Imperial Valley — that whole country, too, would have to be abandoned.

Dr. Widney's plan, however, is one that shows his far-seeing wisdom. It will, in the main, be carried out. But, instead of its being by reflooding the sea, it will be done by converting a much larger portion of its area than he contemplated flooding into a cultivated region. The water will be distributed by irrigating canals, the evaporation will take place from irrigated lands, and the cooling of the atmosphere will be effected by the growing of thousands of square miles of alfalfa, corn, vegetables, and trees of every kind. In a recent letter Dr. Widney says: "The present reflooding of the desert by the unintentional turning of the river I look upon as probably, in the end, a blessing in disguise. If the views I have advanced are correct it certainly will prove such a blessing. With this thought I have not lamented over the failure of the efforts to return the river to its channel again."

The blessing will come, and yet I believe the Colorado will be returned to its old channel. Man with his power and wisdom has set himself the great task. He will accomplish it, and the climatic change will thereby be forwarded, though, instead of a great inland sea, we shall live to gaze upon a vast territory of cultivated lands occupied by a busy, healthy, happy, and prosperous people.

CHAPTER XIX

Palm Springs; An Oasis on the Desert

GIVEN a desert, an oasis is sure to be immediately looked for. Who ever heard of a desert without one? It would be like a sea without islands! The oasis is the eye of the desert; its only means of seeing what it would look like if it were not a desert.

The Colorado Desert has several oases, but they are nearly all made by the labor of man and the vivifying influences of water. One or two small natural oases exist and they will elsewhere be described. But of all oases on the Colorado Desert, Palm Springs is the most beautiful, interesting, and delightful. It is a natural oasis improved by man.

The Palm Springs station

The Indians have always enjoyed Palm Springs. From time immemorial the hot spring has been one of their chief therapeutic agencies in the cure of disease. The dates of Palm Canyon, too, have been a special source of food supply, which they prized very highly, and the close proximity of the spring to the high mountains of San Jacinto where large game abounded, the abundant flow of clear, cold, and pure mountain water from Andreas, Murray, Palm, and West Canyons, and the fact that it is completely sheltered from the north winds and the

fierce blast of the San Gorgonio Pass, all combined to render it a peculiarly desirable location for a village.

The same conditions that attracted the Indians early arrested the attention of the whites, and all through the days of the early emigrations to California its charms and comforts were sung by plainsmen and emigrants, by prospectors and trappers, who had enjoyed its delights after their dangerous and arduous journeys over the less hospitable desert. Now the Southern Pacific railway takes one to within five miles of the valley in which the spring and settlement are located. Riding over the San Gorgonio Pass one often alights at the station to find the pass blast raging in full force. I have elsewhere fully explained the causes of this

Dr. Murray's hotel at Palm Springs as it appeared twenty years ago

singular and unpleasant desert phenomenon. If, combined with the wind, there is the cold of the snow of the mountains one feels nearly perished as he takes his seat in the buggy or wagon that is to convey him to Palm Springs. This penetrating cold engenders a feeling of derision and strong doubt that within five miles a warm, sheltered spot will be found with so little wind that a lighted candle can be carried around out of doors with certainty that it will not be blown out by any stray gust.

I would not have it supposed, however, that this cold windy condition exists all the time. Sometimes the wind is warm, very occasionally hot, and part of the year it blows but little.

Seated in the conveyance we start on the drive. Crossing the wash of the Whitewater, dry the major part of the year, the wide

expanse of the desert lies to our left and the gigantic mountains and spurs of the San Jacinto range to the right. The wind blows fiercely. The sand particles are borne along in its clutch, and ere we have gone a mile we are covered from hat to shoes with the tiny particles. Women generally wrap themselves up, covering their heads with a shawl. Men of impulsive and irascible temperaments give vent to objurgations loud and deep, above and below their breaths. All feel the discomfort of the sandy winds, and some wish they had not come, when, suddenly, in the space of twenty feet, while there seems to be no change in

Dr. Murray's hotel at Palm Springs as it appears to-day

the conditions, the wind ceases and peace and comfort reign, where hitherto it had been storm and discomfort. We have passed into the shelter of one of the protecting spurs which shuts off the wind of the pass as though by a closed and barred door. Now we may shed overcoats and shawls, for neither wind nor cold will disturb us so long as we remain in this sheltered region.

This is one secret of the great charm and attractiveness of Palm Springs. It is protected from the north winds, and it is seldom the hot, scorching winds of the south pass over its sheltered area. While it is subject all the time to the warm and healthful influences of the desert, the harsher and more enervating conditions never intrude.

As we ride along we begin to experience different sensations in our olfactory nerves. The peculiar dryness and "herbiness" of the desert air give place to the damper feeling of growing vegetation. We can smell alfalfa and hear the lapping of running water in irrigating ditches. Soon we smell the smoke of burning wood, and hear the barking of the dogs of the Indian village. Then, in the dusk, tents of campers-out and the dwellings of the settlement are dimly discerned, our buggy stops, and we alight at the hotel.

Cottage of palm-leaves at Palm Springs

After a delicious sleep, with the sides of our cottage completely opened to the refreshing cool desert air, we look around the village. It is only a small settlement, but how interesting! Twenty years ago Dr. Wellwood Murray and his wife established a place of rest and recuperation here, where men and women tired out and weary with overwork or with a tendency to bronchial or pulmonary troubles could come and recuperate and return to their homes completely restored to health. It is free from fogs, and while sand-storms blow a few miles away with uncontrolled fury, they never overcome the barrier of the San Jacinto spurs before referred to. The elevation above sea-level is about 500 feet, and the annual

rainfall three inches. The average relative humidity is but fifteen per cent. The importance of these tersely stated facts is at once apparent to those conversant with the effect of moisture on the development of disease. When, with the absence of injurious conditions, one remembers the superlative beneficial conditions of antiseptic atmosphere, completely purified in nature's own great laboratory, the desert; the vivifying power of direct sunlight; the balsamic and healing odors of the mountain forests which gently breathe down upon this valley every night in the year; the perfect quiet; the pure water from the near-by moun-

Palm Springs store

tain springs, it is readily apparent what advantages Palm Springs possesses as a natural sanitarium.

From an old picture Mr. Eytel has made a sketch of the hotel as it appeared at that time. Nothing but desert shrubs, sand, rocks, mountain, and climate, with the clear blue sky and serene stars, met the visitor of those days. Now what a change! Palms of several varieties, mesquites, roses, vines, and shrubs of many kinds, oranges, lemons, figs, apricots, and grapes show the marvelous productiveness of the soil, and have converted the scene into one of tropical beauty. Around the main building, ensconced in the shelter of orange, lemon, fig, or almond trees, are picturesque cottages and tents. Some of these are built of palm-leaves tacked upon a wooden frame. Thatch, sides, back, and front are all

of the fronded palm, and the effect is as winsome and attractive as the most exacting could desire.

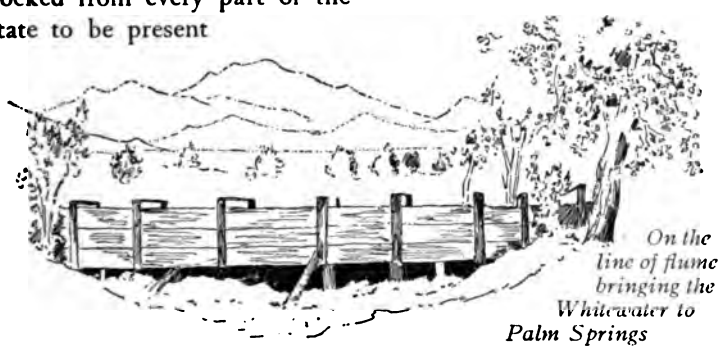
The trees, too, are not scrawny, dejected, struggling members of the arboreal family. They are robust, strong, symmetrical, and vigorous. On their reservation, just across the road, the Indians have a number of fig trees, some of them perfect giants. They bear prolifically, and as the fruit ripens some six weeks to two months before the earliest varieties in and around Los Angeles it brings good prices when shipped to market.

The oranges also are especially attractive on the desert. I have

The McCallum ranch-house, Palm Springs

about thirty orange trees on my home place in Pasadena, but every year, owing to the black scale and a smutty disease that partially covers leaves and branches as if with a thin coating of soot, we are compelled to have the trees "sprayed" with certain chemical compounds. When the spray has done its destructive work and the fall rains come, our trees, for a short time, look fresh, beautiful, clean, and attractive. Then they slowly drift back to their former unclean condition. One can well imagine, therefore, my delight to see trees that all through the year have this fresh, delicious, clean look. There is no scale or disease of any kind afflicting the orange trees at Palm Springs.

Not far away is the Palm Valley store, a typical desert place, where the prospector and traveler, the tent-dweller and the hunter, may alike replenish his stock of canned and other eatables and procure feed for his animals. Close by is the McCallum ranch-house. This is an old-fashioned adobe structure, and was one of the first erected in the valley. A few years before Dr. Murray came to the valley Judge McCallum, formerly of Los Angeles, purchased two thousand acres of land and began to experiment with fruits and vegetables. The results of his experiments, combined with those of Dr. Murray, aroused his enthusiastic determination to make of Palm Springs a great resort. He had all the energy and resource of the old-time California boomer, and people flocked from every part of the state to be present



On the line of flume bringing the Whitewater to Palm Springs

at the auction sales of the land. The time chosen for the sale was auspicious, the weather being perfect, as it generally is during the winter months. Everything went off with great éclat, and sales were many and future prospects for Palm Springs unusually rosy. Though the claims of the desert oasis were strongly presented they were not overdrawn. The place had within itself all the possibilities ascribed to it. Acting upon these assurances a number of people began to improve their places and the desert echoed the activities of the budding town. For a while all seemed to prosper. Then, unfortunately, trouble arose over the water supply. As has already been apprehended by the reader, this was a primary necessity. As well be without soil as water to irrigate with. It had been brought in by means of wooden aque-

ducts and stone-lined, cemented canals from the Whitewater, a distance of eighteen miles.

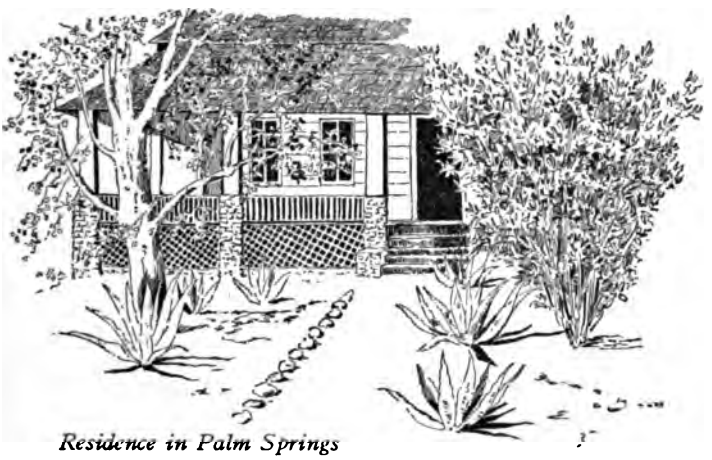
But the floods in the treacherous desert river caused trouble. The channel was changed where the river crossed the desert before reaching the aqueduct and the supply failed. This brought ruin to those who depended upon it, and the water problem to this day has remained an unsolved problem. Until water is assured the growth of Palm Springs will be retarded. A few thousand dollars, ordinary energy, and a fair and honest handling of what water can be secured would remove the main obstacle, and a few short years would see Palm Springs one of the desert marvels of the world.

The stone ditch bringing the Whitewater to Palm Springs

Near to Dr. Murray's beautiful place is an unusually well-built, comfortable, and commodious residence built a few years ago by a San Francisco millionaire who came here as a last hope. The climatic conditions were so beneficial to him that he secured a new lease of life, and in his new-found strength and energy returned to the city of the Golden Gate and married the lady of his choice. The happy couple went to Santa Barbara for their honeymoon. It was unfortunate. He had left the desert too soon, for he took cold, and was too careless in combating it. He returned to the desert relying upon its balmy air and healing influences to drive out the disease, but he had stayed away too long and risked too much, and the end came to his earthly happiness and his life.

Soon thereafter a wealthy Denver merchant, in a state of actual

despair, came to Palm Springs, sent hither by his physician. Though the capitalist had little or no hope, the desert air and healing sunshine soon began to give him a fresh supply of life. He improved rapidly, so rapidly that he decided to go and settle up his Colorado business, return to Palm Springs and devote the remainder of his life to the development of water for the settlement and a few other needed improvements. He went, and his case was but a repetition of that of his predecessor. Trusting too much to what the desert had done so speedily for him, he neglected the precautions he should have taken. He wanted to



Residence in Palm Springs

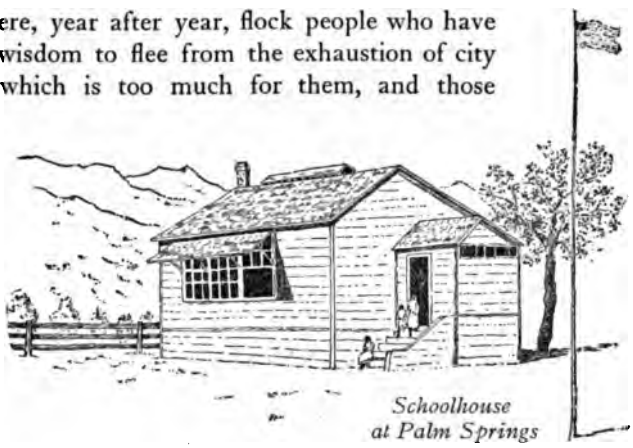
take a last look at his beloved Colorado from the summit of Pike's Peak. In making the ascent he brought on, with great force, his old complaint. A hemorrhage reduced his vitality, and before he could return to the soothing and healing influences of the desert he was "gathered to his fathers."

This over-confidence in one's restoration is one of the things in which the invalid must positively control himself. Recovery is so speedy, there is such a sense of buoyancy and relief, such an inflow of new vigor and life, that one is apt to forget, in the rebound from the depths of despair to the heights of justified new hopes, that it takes time to repair lesions and heal diseased

tissues. The work of healing well begun is a thing to be thankful and joyous about, but it should not lead to the taking of too many risks. Complete health can be assured in thousands of apparently hopeless cases if the invalid will be patient and give himself proper time.

The residence occupied by these two people is now owned by the wife of a San Diego capitalist who finds health for herself and her child in the desert. There is also a schoolhouse and a church in the settlement, both largely the result of Dr. Murray's efforts.

Here, year after year, flock people who have the wisdom to flee from the exhaustion of city life which is too much for them, and those



Schoolhouse at Palm Springs

who need to be restored to health. Many are people of moderate means, and these usually, by compulsion, take the surest and best way to regain the vigor they have lost. They live out of doors in tents that are made so as to open and thus allow fullest access to the air, while affording complete seclusion when necessary. In one of the sketches a tent is shown, the occupants of which purchased a cow. The invalid was the husband of a young school-teacher, who came here on the verge of the grave. His devoted wife cared for him with the energy of desperate love. She milked the cow, and day after day hitched their patient burro to a rude sled of her own contrivance, whereon she placed coal-oil cans, and drove down to the ditch, full of pure cold water from the snow-banks of San Jacinto, there to renew

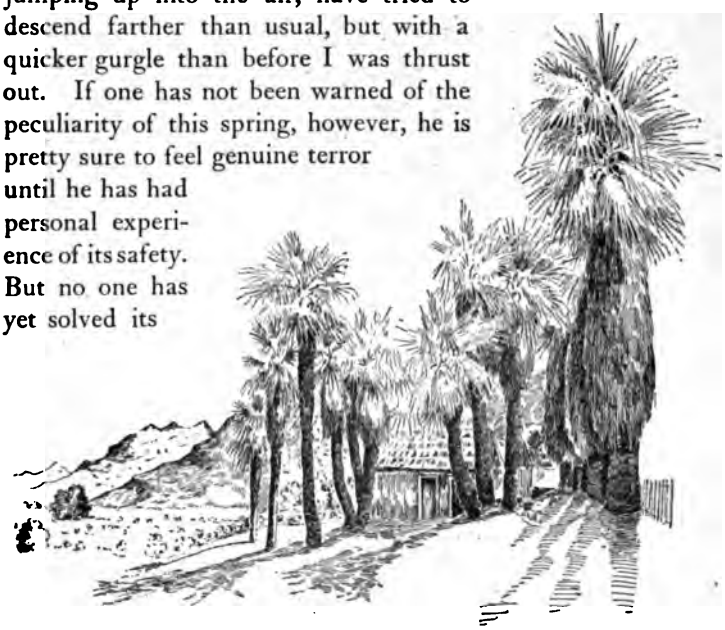
the water supply for the day. I am glad to record that the invalid left Palm Springs perfectly restored to health.

Opposite Dr. Murray's hotel is the remarkable spring from which the settlement gets its name. Here is the Palm Spring, the *agua caliente*, the hot spring, that to Indians and whites alike has been a source of wonder as well as of health for many years. This spring is unparalleled on the Pacific Coast and, as far as I know, in the world. Through a central shaft, varying in size from a small hole to the dimensions of an ordinary well, hot water and sand rise, sometimes spouting high in air like a geyser, but usually merely bubbling over the surface. The water spreads around in a pool about six feet by ten, to a depth of a few inches. The bottom is hard sand until one reaches the shaft, then it is moving quicksand, kept in an almost constant state of ebullition by the upflow of the water. Immediately the bather reaches this quicksand he sinks with a swift motion that makes the heart leap unless he is prepared. In a moment the warm liquid sand closes around the body and it feels as if he were being sucked in and down by the clinging tentacles of some living creature that had the power to hold the body in a most soothing and satisfactory embrace. Then, suddenly, with a convulsive effort, but as gently

Tent life at Palm Springs

Tenter hauling water at Palm Springs

as if one were being lifted up in his mother's arms, the water of the shaft gives an upward "bubble" upon which the bather is lifted completely out and the pool once more becomes placid. The strange thing is that, exercise one's efforts as he will, the spring ejects the bather ere he can more than get his shoulders into the water. I have stood on a plank by the side of the shaft, and, jumping up into the air, have tried to descend farther than usual, but with a quicker gurgle than before I was thrust out. If one has not been warned of the peculiarity of this spring, however, he is pretty sure to feel genuine terror until he has had personal experience of its safety. But no one has yet solved its



House over hot spring at Palm Springs

mystery. Its depth has not yet been sounded and its existence is unexplained.

The chemist has analyzed its waters and tells of the various diseases it is capable of curing, but "all that you care to know is that the black sand washes you as beautifully clean as the best rubber in a Hamman bath, and that the effect of the hot water is wonderfully exhilarating. There is no trace of relaxation of the muscles, none of the enervating influence that usually follows a hot bath. Instead, this mysterious water, so full of mineral strength, acts as a powerful tonic to the system, and one comes

Photo. by H. C. Tibbitts, San Francisco, Cal.

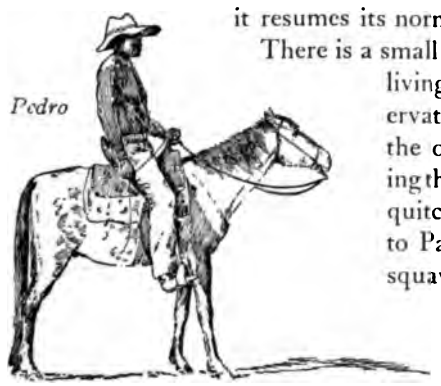
PALM SPRINGS, COLORADO DESERT

out of the bath feeling as though he had taken several glasses of champagne."

So wrote George Hamlin Fitch some years ago, and many baths in the spring enable me to confirm his statements, save and except as to the several glasses of champagne, of which he is a better judge than I.

Palm-leaf sandals

In the spring of 1904 I visited this spring with a number of friends. I had excited their curiosity to the highest pitch, and, in my bathing-suit, I stood on the plank ready to spring into the shaft. The water and sand bubbled up as usual, hiding any opening, but supposing it was where I had always found it, I sprang and dropped into the water about up to my knees. The laugh that went up was disconcerting, and I sought to find the shaft, but to my amazement it had disappeared. Very occasionally, the Indians tell me, it becomes choked up with sand and for a few hours will present a solid surface, then, with one of its convulsive "gurgles," the shaft is cleared, the sand disappears, and it resumes its normal condition.

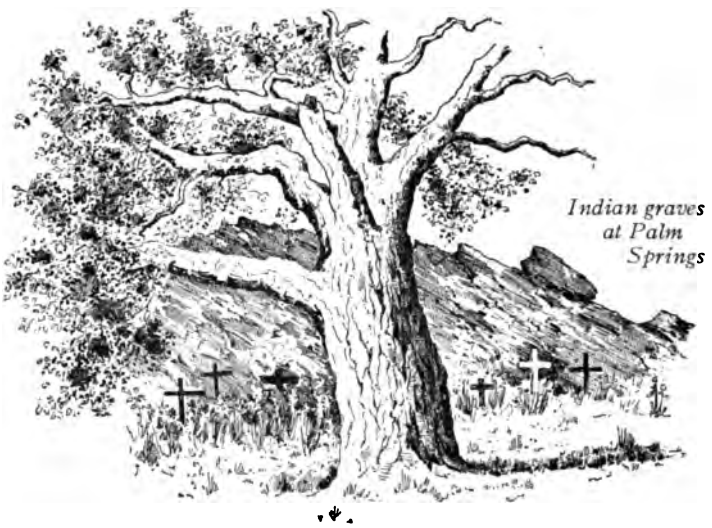


Pedro

There is a small band of Coahuilla Indians living on the Palm Springs reservation. Saturnino is one of the oldest. He aided in building the ditch that brings the Tauquitch or West Canyon water to Palm Springs. Some of the squaws are basket-makers, though most of them engage, with their husbands, in agricultural and horticultural work. Occasionally a woman may be seen, as in the olden days, carrying a heavy load in a blanket suspended from her forehead, or laden down

with palm leaves from which she strips the wrapping splints for the manufacture of her baskets. These palm leaves are also used in the making of sandals or foot-pads, *wak-ut-em*, provided with a loop behind and two tie-strings in front, one passing between the great and second toes, and meeting over the instep. They are still in constant use by the old people.

A well-known character is Pedro, one of the medicine-men and also an expert trailer. As a medicine-man he still has considerable influence with his people, though he does not make the preten-

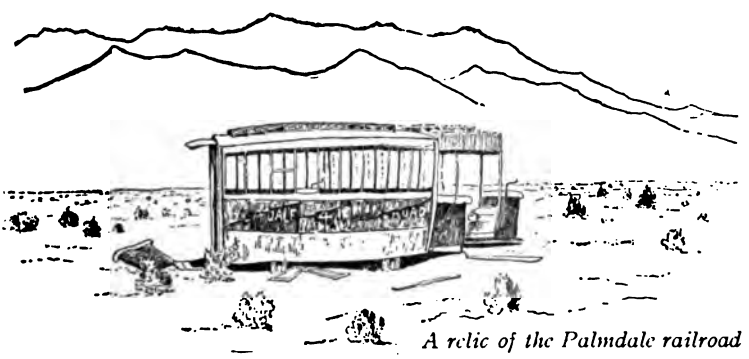


Indian graves at Palm Springs

tious claims that so many of his compeers do in other tribes who live farther away from the white man. As a trailer, however, he is an expert, and many a time he has been called upon by the officials of the county to aid in tracking escaped criminals.

Behind the McCallum ranch is the old graveyard of the Indians. Though no priest ever resided at Palm Springs, the influence of the Church's teachings is manifest in the presence of the crosses over the graves. Cremation and burial were both practised before the coming of the Franciscans to California, but little by little their teachings led to the abandonment of the former, and now burial is universal.

A few miles southwest from Palm Springs, yet not entirely out of the zone of the sheltered valley, is Palmdale. It is a memorial of the boom days. Professor Wheaton of Riverside, who was forced by asthma to seek the dry and curative air of the desert, found himself so much bettered at Palm Springs that he induced a number of Boston people to improve small places. He was also instrumental in organizing the Palmdale company which planted out one hundred and sixty acres in oranges. With a burst of energetic enthusiasm these newcomers determined to have a horse-car railway from Palm Springs station and the lines were laid and cars brought, and for a few brief months regular trips were made each day to and from the station. Then the water complications arose;



A relic of the Palmdale railroad

the trees rapidly suffered for want of a sufficient supply, there seemed to be no immediate or remote prospect of a remedy, and in despair the colony was practically abandoned. So that to-day, if one were accidentally to lose his way on the desert he might come across the rusty rails of the old Palmdale railway, and resting upon it, its wheels almost buried in the ever-shifting sand, find one of the old street-cars, exactly as Mr. Eytel has pictured it.

As I have shown elsewhere, Palm Springs is a natural habitat of a large variety of birds. An abundance of water for them; the sheltered position from the fierce, cold, stormy winds of the mountains and the hot winds of the desert; the rich verdure; the close proximity to the mountains, on the other side of which is a large fertile plain and the placid ocean, — all these things combine

to make it peculiarly alluring to birds. Indeed it has several times been proposed by the expert ornithologists of the state that it be made a special station for the study of desert birds. Professor Joseph Grinnell of Pasadena has published an interesting though brief monograph on "Midwinter Birds at Palm Springs."

In close proximity to Palm Springs are several most interesting canyons. Chino Canyon is to the east and has already been described in the introduction, and the celebrated Palm Canyon and Tauquitch Canyon will be found adequately set forth in the chapter entitled "From Palms to Pines." But there are still two

The deserted village of Rincon

important and impressive canyons that must be visited. These are Andreas and Murray Canyons. About midway between Palm Springs and Palm Canyon a dim wagon-road turns off to the right which leads you to the mouth of Andreas Canyon. Just before entering it, however, a little on one side of the road, the deserted Indian village of Rincon may be seen, in a small, narrow valley. It is close to the foot-hills. Here for many years the Indians had their unpretentious habitations. They brought water down in little ditches from Andreas Canyon and planted figs and grapes and sought in their simple fashion to improve their condi-

tion. Dr. Murray aided them in procuring seeds and they seemed to be progressing, when a wealthy white man of Riverside, with a selfish disregard for their rights, "took up" the water of Andreas Canyon, piped it down to his "Garden of Eden" (sic!) and left the Indians waterless. When I inform my readers that this was done for purely speculative purposes, as practically next to nothing has been done to improve the Garden of Eden, the strong language used to designate the contemptible conduct of some white men toward the Indians will not be deemed too severe. The Indian agent of that day was not inclined to put himself out to defend the rights of his people and they were soon "dried out" and compelled to move elsewhere. Fortunately the welfare of the Indians to-day is in better hands. The present and former Indian commissioners have injected some honor and regard for simple justice into the minds of agents and inspectors, and it is expected that erelong this criminal injustice and brutal theft at Andreas Canyon will be remedied, the Indians again allowed to take water for all their needs, and their village be rehabilitated. When they left it in their desperation and despair the shovel was allowed to remain by the side of the ditch that their labor had dug. The wooden mortar, hollowed out of the log with a stone axe, the Dutch oven, the trees planted and watched over with so much solicitude, as well as the small dwellings were all abandoned. In a sheltered spot hidden by rocks and shrubs we found a stone mortar and three pottery ollas, placed there doubtless by some broken-hearted woman who hoped some day to return for them. But the battle of life has proven too

Hidden ollas, Rincon

hard for her. The utensils were never needed, for the ways of the white man have so roughened the red woman's pathway that she has left it and gone to discover for herself whether the "Sweet By and By" is any better than the "Hideous Now."

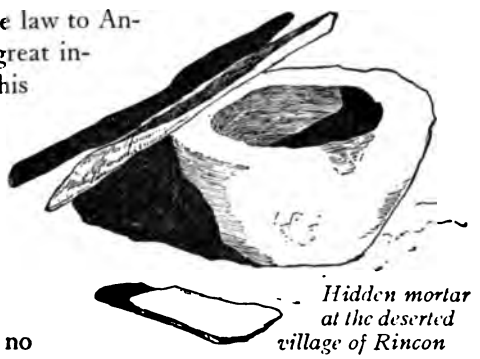
The entrance to Andreas Canyon is strikingly rugged and picturesque. The road approaches at such an angle that one can scarcely believe there is any entrance through the great rocky barrier. Massive rocks, great boulders, desert shrubs, and the waving branches of stately palms combine to make a rugged but entrancing picture, and on making a sharp turn we find ourselves really within the canyon. On our right is a large cave, sheltered by flat masses of overhanging rock, in which the Indians used to live. In the floor of

The entrance to Andreas Canyon

the cave, which extends out into the canyon somewhat, are a number of mortars, hewn out of the solid rock, where the aborigines pounded their acorns and dates and mesquite beans and seeds in the preparation of their daily food.

We need to go a very short distance up Andreas Canyon to have its sweet picturesqueness revealed to us. The clear mountain water comes gurgling and dashing down in fairly large volume, and alders, cottonwoods, and sycamores with willows and a large variety of flowering plants and shrubs vie with the palm in claiming our interest and attention. The canyon received its name from an old Indian who much belied his simple and harmless appearance. In his contact with the white man, aiding him in planting fig trees, oranges, vines, etc., he had learned to love the seductive and strong liquors of his employers. He was a man of considerable energy,

and upon a fertile "bench" about a half-mile up the canyon he built a small adobe house, planted a fig orchard and a vineyard. In some way he learned the art of distilling, and when his grapes began to bear he made his own rude contrivance and began to distil brandy for home consumption. For several years he kept this up, supplying his people with liquor and causing considerable annoyance and mystification to the white residents of Palm Valley by their occasional intoxication. Whence did the Indians secure the liquor? All protested they were innocent of supplying them, and still the bottle circulated and the drunkenness continued. At length Dr. Murray determined to make a little quiet investigation on his own account, and going up to visit Andreas surprised him in the very act. With kind firmness the doctor explained the law to Andreas, and showed the great injury he had been doing his own people by fostering in them the habit of drinking distilled liquors, and then with a few quick blows demolished the still and spilled the liquor. The penitent Indian made no protest, and moonshining in Andreas Canyon thus came to an abrupt end. The old chief (for he was chief of the small band who lived near) soon afterward died, and I believe this is the first time the story of his moral delinquency has been told.



Hidden mortar at the deserted village of Rincon

We now begin the ascent of the canyon. It winds and twists about like a snake, winding its tortuous length deeper and deeper into the heart of the range. It is steep and in places quite narrow, and the cold stream and dense brush make it hard to climb, for one must cross the stream again and again and also force his way through the brush.

The first palm we see is one that on account of its solitariness has been called the Lone Palm. It rises majestically from the rocks, and we see it from below through a cleft in the canyon's side

so that it fairly towers into the abyss of the sky. A mass of rock or shrubs gives the illusion that a man is standing in attentive stillness looking over the vast expanse of rock and desert visible from this point. He seems dominated by the vastness, the mystery, the terror of it all, while the palm, waving to and fro as if in hovering agitation, and speaking in whispers of rustling sibilation, seems to be warning him to beware of wandering from her protecting shelter.

All the way up, at irregular intervals, one comes upon the palms, sometimes in groups, and occasionally solitary and alone. Most of these are untouched by fire, consequently the old leaves have fallen over and formed a protecting covering for the trunk.

Where Chief Andreas lived in Andreas Canyon

These are generally spoken of as "well-dressed" palms, and in the various sketches the reader will be able to discern the difference between a "fired" and a "well-dressed" palm.

Our objective point is the falls of Andreas Canyon, which are about three miles from the mouth, but three miles of arduous walking, over and around boulders, forcing a way through the brush, and fording the stream again and again seems to take a tremendous amount of exhaustive energy. The canyon still winds and twists in monotonous uncertainty, and once or twice, in desperation, we leave the bed of the stream and cross the divides or ridges in hopes of finding the long-looked-for falls. If we could divest ourselves of all hurry and impatience we should revel in the picturesque beauty combined with the rugged grandeur of the scene, for there are few short canyons in California — the wonderful state of canyons and gorges — that can rival Andreas. At length, to our delight,

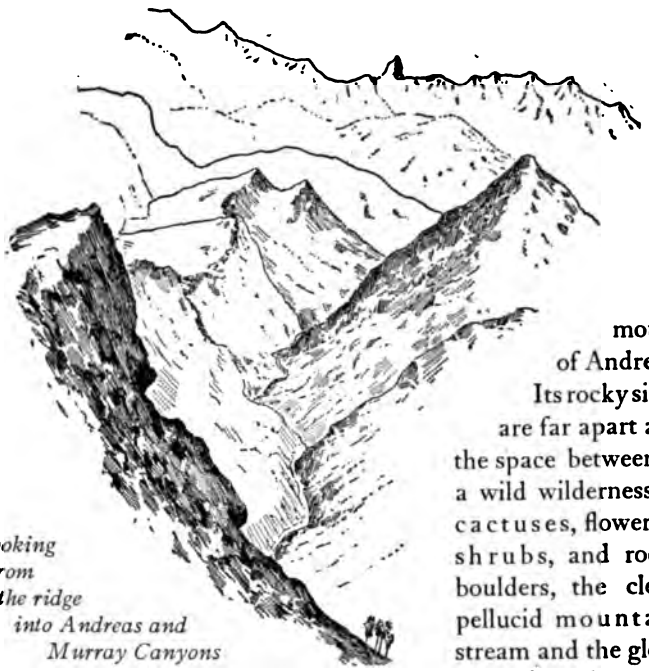
on making a turn, the falls are before us. Crowned with a beautiful grove of palms and lesser foliage that seem to stand near the very edge of the fall, giving a delicious sense of color to the reddish gray granite walls, the water comes gliding down a steep declivity at about sixty degrees to the bed of the canyon below. Two huge boulders arrest its flow, around which the water dashes itself into a fury of white foam and spray. The fall divides into two and more parts except when the water is in full flow, but no matter when seen it is enchantingly lovely. The mocking-birds, larks, humming-birds, and canyon wrens all come to enjoy the scene, for it is quiet and lonely enough for the shyest and most timid of creatures. It is seldom visited, perhaps not five persons a year going to see it. Making a sharp turn at its foot, the canyon is deceptive enough to lead one away from the fall unless his ears are attuned to the difference in the rippling of the cascade and the ordinary flow of the stream.

Waterfall in Andreas Canyon

Palms, Andreas Canyon

Ascending to one of the ridges of the mountain we have a glorious and extensive view of towering peaks behind with two canyons before us. Immediately at our feet, winding and curving away into the secret recesses of the range, is Andreas Canyon, while to the left, smaller and less clearly defined, is Murray Canyon, so named after the venerable genius of Palm Springs, my good friend Dr. Wellwood Murray. The sight allures us. We have walked up Murray Canyon, but now we want the experience of crossing over from Andreas and walking down it. The distance apart is about two miles, which we make

with some difficulty, the slopes being steep, rocky, and deeply gullied. At length we are in Murray Canyon, and save for some variations in width we might well imagine ourselves in Andreas or Palm Canyon. On reaching its mouth, however, we look back, and find it far more imposing than



Looking from the ridge into Andreas and Murray Canyons

the mouth of Andreas. Its rocky sides are far apart and the space between is a wild wilderness of cactuses, flowering shrubs, and rocky boulders, the clear, pellucid mountain stream and the glorious palms alone giving the picturesque life we so much love to see. Beyond and higher up are the steep walls of the volcanic upthrust that makes San Jacinto so noted, while on the higher peaks stately pines stand in sight of perpetual snow from which they are constantly watered. As we turn, the vast stretch of the desert hemmed in by the San Bernardino Mountains is laid out before us, its monotonous plain — almost colorless at this distance — being the very antithesis of the canyons in which our day has been spent.

CHAPTER XX

Prospecting and Mining on the Desert

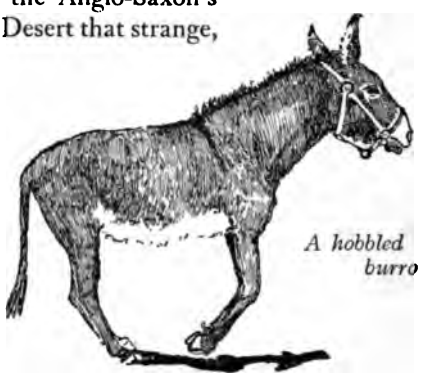
FROM time immemorial men have sought wealth in the most unlikely and unpromising places. There is no desert, however terrible in its natural conditions, that man will not dare if thereby he may gain gold, or thinks he may. The lure of the mine is more potent than the lure of fame, of beauty, of power. The desert has proven itself a natural home of the precious metals. The great Comstock lode that made Virginia City, Gold Hill, and near-by camps and gave colossal fortunes to the Floods, Fairs, O'Briens, Sharons, Millses, Mackeys, Joneses, Stewarts, and others was in the heart of the Nevada Desert. So were Hamilton, Eureka, Austin, Tuscarora, Bodie, and Esmeralda, and later, Randsburg, Tonapah, Manhattan, Goldfield, and Bull Frog. Millions, nay billions, have been taken from these mines, while in Arizona a score of mines could be mentioned from which vast wealth has been taken.

Gold, silver, and copper have already been found in large quantities within the borders of the Colorado Desert. The Hedges Mine, reached from Ogilby station, on the Southern Pacific, has yielded not less than five millions to its owners. In 1897, when it was at its best, it had about four hundred men on its pay-roll, and its forty-stamp mill was kept thundering away day and night. At one clean-up $50,000 was taken. So successful was it that its owners increased the mill from forty to one hundred stamps, and made great preparations for further development. Then things went wrong and a receiver was appointed, and for some seven years the mine has been in his hands. Not far away is the "American Girl" Mine, owned by Ex-Governor H. H. Markham and his confrères. United States Senators Stephen Dorsey and

J. P. Jones have also extensive mining interests at Picacho on the Colorado River.

It is not surprising then that men have constantly been found who were willing to undergo any peril, dare any danger, face any hardship with the possibility ever before them of "striking it rich" and by a lucky find leaping at once into the possession of a fortune.

To possess gold most men think is to possess that which purchases all else needful. This erroneous and pitiable view is one great secret of the prospector's and miner's daring in braving all the horrors, known and unknown, of the desert. Mystery, too, also has great fascination for some men. And it was natural that from the early days of the Anglo-Saxon's experiences on the Colorado Desert that strange, wild, fantastic stories should float down to later comers' ears of fabulously rich mines known to the Indians which they would not discover to the white man, or of mines accidentally discovered by weary travelers at a time they could reap no advantage from them, and which Fate afterwards prevented them from refinding. Such a lost mine is the famous Pegleg Smith Mine, the story of which can serve as a type for a score or more of lost mine stories that are current in the mining states of the West.



A hobbled burro

In a recent number of the *Los Angeles Herald* the story is given as follows. The story is an old one on the desert and is often told by the camp-fire, in the miner's cabin, on the teamster's wagon, or when a couple or more prospectors are tramping through the hot sands after their pack-burros. And it is never told twice alike. I have heard it a score of times, and each time different, so while this written story is still another version it is just as good as any of the others, and I give it as it is. Perhaps I ought to say, in justice to my readers and myself, that I have no faith

Photo. by C. C. Pierce & Co., Los Angeles, Cal.

ON THE EDGE OF A PLAYA, COLORADO DESERT

in the story, that in many details of geography, etc., it is altogether inaccurate, and that its "positive facts" are utter nonsense.

"WHERE IS PEGLEG SMITH'S LOST MINE?

"This is the puzzling question which has caused many a fortune hunter to search the desert. Somewhere near three buttes that rise from the burning sands the gold lies easy of access. Wealth waits for the man who can find the spot where seventy years ago a party of weary and thirsty trappers camped over night.

"The story of the lost mine has been told many times, but it has remained for one who is interested in the older West to sift the facts. and this is the first authentic story ever pieced together:

"In the year 1836 a man named Smith, and known as 'Pegleg' Smith because he had lost one of his natural legs and wore a wooden one in its stead, with a party of trappers came from St. Louis to the head of the Colorado River. They followed down that stream to the mouth of the Gila River and then struck off across the desert. From Yuma their course was in a southwesterly direction, across a wide stretch of desert, utterly devoid of vegetation, and with no sign of water or life of any kind. They traveled for three days toward some low hills, but as they pressed on they appeared to recede and be always about the same distance from them. At nightfall on the fourth day, however, they made their camp at the very base of the southernmost of the hills.

"In the dim, fading light they could faintly discern the tops of three small buttes to the northward, toward which a deep canyon led. They were nearly out of water, so one of their number was sent to explore the canyon to see if by any chance a spring of water was there. Before long he had climbed to the top of one of the buttes, but had found not a drop of moisture. While at the top of the hill, however, he discovered many loose pieces of black metal, with here and there pieces of some yellow metal showing on the surface of them. He gathered several of the pieces, having the impression that the yellow metal was copper in its native state.

"The trappers camped at the base of the hill that night, and in the morning, by the clear light, they descried a high mountain to the northwest. Their supply of water was almost gone, and

they felt that their only hope was in reaching this high mountain before what remained of the water had been entirely consumed and they perished from thirst on the burning sands of the desert. The man who had picked up the pieces of black metal on the hill-top gave no thought to them, and the one thought and hope in the minds of all of them was to reach the mountainside and find water.

"That night they came to the mountain, which all day had seemed just a short way off, and found a spring of cool, clear water. They were saved, and they thought of little else. The mountain was named 'Smith Mountain,' in honor of Pegleg, who was the first to discover it, and it bears that name to-day.

"At Temecula, where the trappers first stopped, they were told that the pieces of black metal found on the three buttes were gold, but the proof was not conclusive until they reached San Bernardino and submitted their find to an expert. Even then they did not realize the immensity of their discovery. It must be remembered that this was before 'the days of old, the days of gold, the days of '49.'

The trusty pack saddle

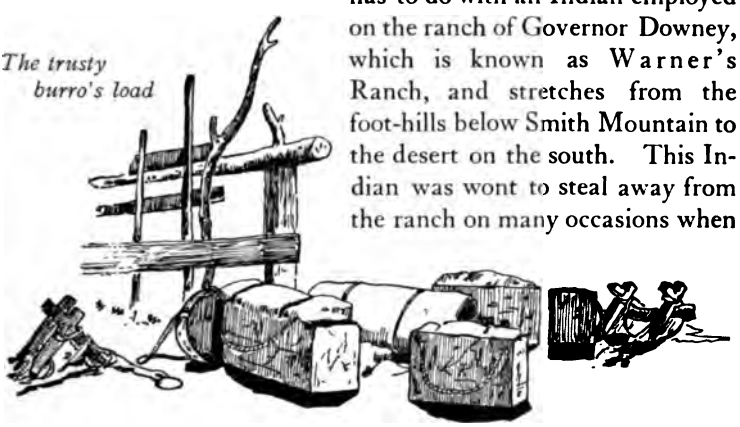
"After the discovery of gold in California and the rush of adventurers from all over the world to the new Eldorado, Smith began to consider. Eventually he became imbued with the idea that he had made a great discovery, and he went to San Francisco where he organized an expedition to seek for the three buttes in Southern California where fabulous wealth was hidden. Fully equipped for a long stay on the desert the expedition left Los Angeles and started in a southeasterly direction for Smith Mountain, where the last water was to be had, but before reaching the springs some Indians who had been brought along to pack the supplies decamped quietly in the night-time with all the provisions and most of the camp equipment, and the expedition was forced to turn back.

"Pegleg Smith, disheartened by the catastrophe, left his followers in San Bernardino, and nothing was ever heard of him again, so

far as history tells. Whether he again attempted to locate the three hills of gold and lost his life on the burning sands, or whether he abandoned the quest and left the country for good, is not known.

"From this time on the story of Pegleg and his discovery began to spread and to assume fantastic forms. Every one who related it told it differently. However, there were those who knew and appreciated the real facts regarding the find, and who never gave up the idea of some day making a journey across the desert in search of the gold that they knew must be there.

"The next authentic piece of history concerning the Pegleg Mine has to do with an Indian employed on the ranch of Governor Downey, which is known as Warner's Ranch, and stretches from the foot-hills below Smith Mountain to the desert on the south. This Indian was wont to steal away from the ranch on many occasions when



The trusty burro's load

he could be fully equipped for a long journey and sometimes upon his return he would display a quantity of gold. It was in the form of black metal, generously sprinkled with free gold, and readily passed for currency at the country stores.

"The Indian was never very particular whether he got the full value of his nuggets or not. He often remarked that he knew where there was plenty more. It was known that he used to enter the desert by way of San Felipe Canyon, which would take him in the very direction of the three low buttes described by Pegleg Smith and his comrades after their first trip over this region, when the discovery was made.

"All these circumstances eventually came to the ears of Gov-

ernor Downey, and he went to the ranch for the purpose of interviewing the Indian, but before he reached there the Indian had gone away to Anaheim and there he was killed in a quarrel over a game of cards. Governor Downey closely questioned the squaw of the Indian and succeeded in getting her to describe as best she could the route taken by her brave on his mysterious journeys to the desert. She said that the Indian got his last supply of water at the foot of Smith Mountain at the identical spring where Pegleg and his comrades found water after leaving the three buttes on the morning after their discovery. She said that he always left Smith Mountain at daybreak and traveled toward

Prospector on the march

the sun and at about three o'clock in the afternoon he would come to the place where 'mucho, mucho gold' was to be had.

"Since that time it is hard to separate the reliable stories of Pegleg's discoveries from the unauthenticated ones and the purely imaginative ones. In 1860 a man named McGuire organized a party of six in San Francisco to go to the Pegleg mine. He claimed to have been there, and showed a number of very valuable gold nuggets to substantiate his assertions. He had certificates of deposit on a San Francisco bank showing that he had plenty of money, and said that he had obtained them by depositing nuggets like those he carried. The six adventurers went through San Felipe Canyon on to the desert, and that was the last ever seen of them. Their bleached bones were found many

months afterward. The bones clearly told the story of the fate of that expedition.

"Fifteen years after this a prospector, in making his way from Arizona to California, wandered far from his way, and became lost on the desert. After he had traveled about for two days he saw, away off in the distance, some low-lying hills, and made his way to the foot of them. In search of water to quench his terrible thirst, he entered a little canyon, and made his way through it to the very top of one of the little buttes. Here he found a number of black nuggets, and believed that they were gold, but water was more precious to him than gold at that time, and he descended to the desert again and finally crawled to the foot of Smith Mountain, where he, too, found the little spring of life-giving water.

"As soon as he was able to travel, this man came to Los Angeles to organize a company to go with him back to the desert; but the hardships he had undergone had been too much for him, and he fell ill. When he learned that he was going to die he confided to Dr. De Courcey, his physician, the particulars of his discovery, and placed in his hands two thousand dollars' worth of gold nuggets, which were those he had picked up during the few months he stayed on the top of the little butte.

"After the death of the miner, Dr. De Courcey spent some time on the desert attempting to locate the vast treasure, but he did not succeed, and finally he, too, died.

"At Flowing Wells, on the edge of the Colorado Desert, the Southern Pacific road has a station, and the agent of the road here some time ago reported that an Indian squaw came to his place one day and showed a quantity of gold nuggets. She guarded them jealously, knowing well their value, but would not talk freely nor tell where she found them, but would point to the direction of Smith Mountain, in line with which would be the three low hills mentioned by Pegleg Smith. This reticence on the part of Indians on this coast is general among them, for the story is that they were told by the Jesuit priests, at the time the Mexican government expelled them from this country,[1] that the Great

[1] This is on a par with a score of statements in this veracious (!) narrative. There never were any Jesuit priests in Upper California, and those who were in Lower California were expelled by the Spanish king, Carlos III, long before there was any Mexican government.—Author's Note.

Spirit would punish them if they ever told or showed a white man where there was gold or silver located.

"Only three months ago a man came across from the Banning side of the desert to a point about twelve miles above Yuma, and stopped at a mill near the river to obtain water and rest. He told the engineer at the mill that he saw many very queer things on his trip, and took from his pocket a handful of black nuggets which he said he thought might be lead by the weight, but concluded they were iron pyrites and laid them down. After he went away the mill man picked up one of the nuggets and with a file removed the coating. Then he discovered it gold. He started in pursuit of the man, overtook him and learned from him that he picked up the nuggets in a gulch where the wind and sand had driven him for shelter, and where he remained all night. He said that there were cartloads of that stuff there. The black coating over the gold obscured from him the value of his find as it has from many others both on the desert and in the Klondike country.

The pack-burro fording a stream

"The nuggets which this man picked up were just like those which Pegleg Smith's comrades found, just like those the Indian brought to Warner's Ranch, and just like those which McGuire brought to San Francisco.

"A wealthy citizen of Riverside named Thomas Cover spent many years in running down clues concerning the location of this great store of wealth, which he was thoroughly convinced existed somewhere on the desert, and finally lost his life in a search for the treasure. He made many trips across the sand wastes and one proved to be his last. He never returned to civilization.

"There are countless stories about the Pegleg Mine which might be related, and not a few of them seem to have the semblance of truth about them, but those which have been related in the foregoing are known positively to be based upon the truth.[1]

"People still are living in San Bernardino who knew and have seen Pegleg Smith and the nuggets of almost pure gold which he brought from the desert. At Warner's Ranch there are to-day people who knew the Indian, and who saw his gold. The records of the San Francisco bank show that McGuire deposited gold nuggets there worth many thousands of dollars. In fact, the authentic history shows that McGuire was the only one who fully realized the magnitude of the find at the time of being on the ground, and the only one who profited largely from it.

"Numerous stories have been told from time to time, during the years which have intervened since Pegleg Smith's wonderful discovery, of Indians and white men who have displayed nuggets of the same kind as those found by Pegleg Smith's comrades, and in every instance they have told of their travels across the desert, of the spring at the base of Smith's Mountain, and of the three buttes rising up out of the desert between Yuma and San Bernardino. Somewhere in this mysterious region are the three hills of gold, told of in all of these tales of the desert. Somewhere, within the grasp of some one who has the hardihood and the perseverance to find it, lies the vast treasure that Pegleg Smith came so near calling his own. The day will come, and the chance is that it is not so very far distant, when the news will be given to the world that Pegleg Smith's bonanza has been found, and somebody will be the richer by many millions.

"There is this to be said of the region in which the stories of the Pegleg Mine discoveries all tend to locate the treasure store: it is a mineral country, every inch of it. Enough is known about the awful desert which stretches from the Colorado River nearly to the sea forever to eliminate the idea that no gold exists there. It is there, and it only needs to be found.[2]

[1] If they are *based* upon the truth they slope very considerably from the perpendicular. — Author's Note.

[2] Most of this mineral exists only in the fertile imagination of this newspaper writer. — Author's Note.

"All of the country between the Colorado and the sea is heavily mineralized, and somewhere in between is the great deposit or ledge, bearing gold in such quantities that the brain of man fairly reels at the thought of such great wealth. It has always been and always will be that such vast treasure stores are hidden away from man in most inaccessible places, and he who discovers the hiding-place must be intrepid and brave even to foolhardiness. So it was in the frozen north, where man faced every peril of land and sea to find the gold. So it is on the desert, where the bones of many a brave man are now bleaching in the glare of the fierce sun.

Pete McGuire

"There is abundant evidence to prove that the Pegleg Mine exists. So much has been written and told of the Pegleg Mine and so widely divergent have been the accounts of its discoveries that there has grown up an impression that it may be all a myth. Such an impression, however, is not borne out by the facts regarding the wonderful discovery, which are as much a matter of true history as those in regard to Washington crossing the Delaware. Grizzled old grub-stake prospectors, with lurid imaginations stimulated with copious draughts of desert whisky and 'Old Tom' tobacco, have poured so many wild stories about the Pegleg Mine into the ears of sallow-complexioned tenderfeet that it is no wonder the whole story has come to be looked upon as a long stretch of some overwrought imagination."

It is seldom that an old prospector or miner runs off in search of one of these mythical (or real) lost mines. It is generally the raw hands that are allured by the prospect of such "easy" gold. Two such recently came to the little desert town of Mecca. They bought a burro and provisions to last two healthy men two or three days. When remonstrated with about starting out on

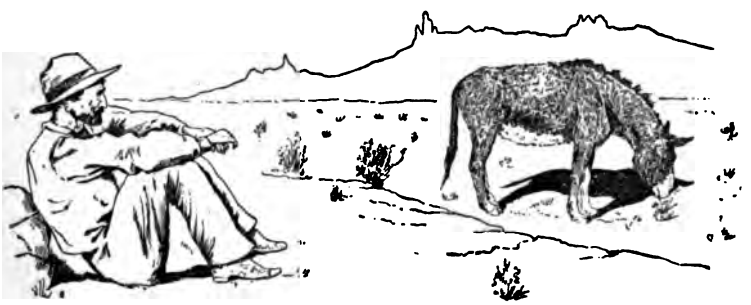
the desert so poorly equipped, one of them seriously replied that while he was a stranger to the desert, his companion had ridden over it twice (on the train) and had thus become "acclimated." Could human folly transcend this? Yet these two men took their lives in their hands and went out on their search. Fortunately no storm or great heat arose or they certainly would have added their names to the long roll that these "lost mines" have charged against them. They were gone two days, and when they returned they acknowledged they had been on a search for the long-lost "Pegleg Smith Mine." "But," said one of them, "we've had enough. No more searching for mines; at least, none for me!"

There have been and are, however, successful mines on the desert and these are a justification for the hope that others will be discovered. "Where gold is found in one locality, it may be found in another," and "One man's luck may lead to another man's," are proverbs that the prospector constantly keeps before him.

The Colorado Desert has always had an attraction for the prospector from the earliest days of American occupancy — aye, and long before. Its very desolation seemed to be an allurement. The prospector argues that surely a place which is obviously so cursed that nothing will grow upon it must have been created by the Lord of all things for some purpose, and the only purpose it could possibly have was to carry mineral hidden somewhere below its forbidding surface. Though traversed by hostile Indians, the prospector braved its terrors and went with his patient and sturdy mule or burro determined to wrest from it all its golden secrets. What a history of woe and sorrow, of lonely anguish, of horrible death under torture and fear, the history of the prospectors of the Colorado Desert would be if one could ever gather its particulars! But it never will be written, never can be written, as no eye but the All-seeing One, with the silent and pitiless stars, ever saw the horrors perpetrated upon the adventurous white men by their crafty and bitter foes.

Poor prospectors for the pelf of the earth, if sufferings and woes on earth count for anything, in the future your lot will be made easy. No ordinary city-bred person can more than faintly

conceive what such a life means. Where shall the prospector go? He must first of all decide that important question. This decided, he goes to the nearest outfitting point. All love for his fellows he must stifle. If he has wife and family, kindred or friends, he must either say them a long "good-by!" or leave them in doubt as to his whereabouts. He purchases a burro. Then he "outfits." Flour, bacon, coffee, sugar, beans, dried fruit, baking powder are the staples. Weight must be considered. Luxuries are out of the question, and what people ordinarily consider necessities must be "pared down" to the smallest weight and bulk. Frying pan, coffee-pot, water canteen, pick and gold pan, with one or two blankets complete all his



Resting after the day's work

burro can carry. One of the blankets goes under the pack-saddle and the pack is carefully fastened on. There must be equal load on either side and it must be so placed that there will be no rubbing to lame the back of the animal, upon whose strength and willingness so much depends. With canvas covering over the pack the diamond hitch is thrown — the despair of the tenderfoot — and with frying pan, coffee-pot, and gold pan either tied on the top of the pack or swung loosely in a gunny-sack affixed to the rope, the sturdy adventurer turns his back upon civilization, upon luxury, upon association with his fellows, upon books, newspapers, and a knowledge of current events, and goes to live a life of solitude, and with death always before him. His senses must ever be alert, for he must keep near to water. He must go where his burro can find some

slight picking, for, though a prospector's burro can live where a goat would starve to death, he must have some wherewithal for his stomach's coats to grind upon, or the prospector is left alone in the desert to face the horrors of getting back to civilization with incredible hardship, or to wander about in that gray sand with the pitiless sun shining into his brains and robbing them of life and knowledge so that he wanders around and around aimlessly, in a fateful circle, until the hideous vultures watch for his end.

He knows all this, but he grimly clenches his teeth, and walks over the soft and burning sands into the hard and burning canyons, and over the rocky and burning mountains. Wherever he sees the slightest indication of mineral he picks and chips, and examines with his little microscope, or tests with the few chemicals he has in his pockets. When night comes he strips the pack from his jaded and faithful burro's back, hobbles him and turns him loose, then opens up his stores. His gold pan must serve him as a bread pan, or he must mix up his dough — as I have often done — in the flour at the top of his flour sack. A few dried cactus plants, or arrow-weeds, or greasewood, or sage-brush afford him a fire, and there he tosses his flapjacks, using the grease from the bacon he has fried to keep them from sticking. Then at it he goes. He has worked hard since early morning — long before sun-up — and it wasn't worth while stopping for lunch, so he is hungry, and flapjacks and bacon and bacon grease, with milkless coffee, are good, and if he wants dessert he just adds a little sugar to the piece of flapjack that is left over and eats it with a relish. Once in a while, perhaps on Sundays, — though he is never quite sure which is Sunday, after he has been a few days from town, — he stops long enough to cook a mess of dried fruit, using the coffee-pot as a stewpan, or he puts it on at night, carefully propped up on three stones over the fire and with plenty of water to it, so that it will not all cook away, and lets it simmer all night. Then with a confidence as simple and serene and unknowing as that of a newly born babe he spreads out his blankets on the softest rock he can find, takes a chunk of limestone or sand or lava for his pillow, covering it with his soft felt hat, and with or without

a prayer — most likely without — stretches out and for a while dreams wide awake, gazing up at those same stars that shone on the patriarchs of old as they wandered to and fro in the deserts of Asia Minor. And then soft, gentle, dreamless sleep, the sleep of the healthfully weary, falls upon him. Heat nor cold troubles him very much. It is generally cool at night and his constant outdoor life renders him impervious to all ordinary variations of temperature.

But now and then a sand-storm comes, and then he must look out. The winds blow with the force of a hurricane, but the air is hot, hot, hotter, hottest, and the sand seems to have been scrubbed and rubbed, one particle against another, until it is glowing all through with heat. If it is coarse sand it strikes him with force enough to make pits in his cheek as if he had had the smallpox. If it is fine he must lie down and cover his head with a blanket, and put a wet rag over his nose and mouth, or he will suffocate.

Though it is desert there are times when the flood-gates of heaven are opened and a new deluge strikes this old earth, with no other man to wash away than our lonely prospector. If he is camped in the recesses of a canyon he must instanter, regardless of sheets of descending water, climb the steep hillsides to a place of safety, daring the perilous precipices and the lightning, which bores zigzag holes of piercing light through the terrible darkness of the night. I have sat out several such storms, when old pioneers wrapped their heads up in their blankets and confessed they were afraid — frightfully scared — scared all through to their very boots. The lightnings were not few and far between, but perfect hemispheres of jagged darts of brilliant violet hue and an intensity that led one to feel it was a special display arranged for the delectation of the powers above.

Yet, though I have been speaking of water coming down in floods, a few hours after such a storm one may almost perish for lack of water. The ground is often impervious and the water runs off in frightful torrents as fast as it falls. If it is sandy desert it disappears. The thirsty sand swallows it up, and a foot down you can kick up dry dust, though the storm seemed as if it might have soaked through the whole world. And in

Photo. by C. C. Pierce & Co., Los Angeles, Cal

A PLAYA ON THE COLORADO DESERT

the dry times what will not a man drink? Oh, you city dwellers, who must have distilled water and Apollinaris and Shasta and iced drinks, think just once of the poor prospector at an alkali pool! Stagnant, dirty, full of filth, a standing place for animals and fearful night creatures, bitter, salt — yet that is all he can get. It is lukewarm and sickening. And what encourages him through all these trials? He "hopes" to strike it rich. He has what the phrenologist would term a well-developed organ of hope. He is imaginative. He sees visions. He dreams dreams. He doesn't look like an idealist; his hands are horny, his nails untrimmed and black-bordered, his hair and beard are unkempt, and if he ever shaved no one now would know it. His eyes seem ever bent downward to the earth, and his lips are as thick

Burros rolling

and sensuous as his eyes are dull and heavy. Yet he is a dreamer. He can see in these inhospitable, barren plains or these dreary, sandy deserts or these rough and rugged slopes pockets of the precious metals. He can see his pick discovering them, and then, in succession, the shaft, the drift, the stope, the bonanza, the mill, the bricks of precious metal, and the hoard at the bank. He sees his wife in silks, satins, and diamonds riding in her carriage drawn by fiery horses driven by liveried coachmen; or himself in an automobile with a French chauffeur. He sees a brownstone front, with lackeys innumerable, and a table covered with finest linen set forth with cut glass and silver and loaded with every delicacy the markets afford. Who sits at the head there? Who moves about in this lordly mansion, smoking twenty-five-cent cigars and giving orders with consciousness of

power and right? Who saunters into the library to meet distinguished guests or to greet the flower of society in the parlor or drawing-room? It is he, the dreamer, the prospector, the burro-driver, the eater of flapjacks and bacon, the sleeper under the stars, the shelterless wretch of the storm.

Ah! there is an allurement in these dreams that exercises such a power of fascination over minds as renders weak the bewitching enchantment of a Lorelei or the singing of the sirens. Once let a man yield and his course of life is cut out for the whole of his days. Should he strike it rich his dreams will come true. He sees the Clark mines of the Verde at Jerome. He remembers the Copper Queen, the Anaconda, the Comstock.

But, alas, should he be taken ill! Who is there out in that forsaken place to care for him? He tries his simple remedies, in his extremity tries herbs the Indians have shown him how to use. He is too weak to gather wood, to go for water, to light a fire. He grows weaker day by day. Now and again he faints, and the hours fly past and he wakens parched with fever and the deadly glare of the unsympathizing sun. His burro wanders off forgotten, the rats and other vermin come and watch. The timid lizards even approach nearer. The cottontails look on with great, brown, liquid eyes, and even the dread of the desert, the rattlesnake, comes and coils upon his breast, starting with surprise when the yet alive wretch makes some meaningless movement in his pain. The hours pass. The darkness of night follows the brilliancy of the day. Still he lies, but he moves not. The lizards runs over his face and he makes no stir, the rats gnaw at his flour sack and he hears them not. There is a flapping of wings heard above, and a great black, bald-headed bird with hideous beak and great bleary eyes swoops down upon him, and dreams and dreamer are at an end.

Recently I met an old soldier prospecting on the desert. He fought at Chickamauga with the 59th Ohio. He was now, though old and feeble, prospecting for gold on the desert. When I asked him how many claims he had he replied, "I've eleven grandchildren, and there's one for each. I never expect much for myself, but they'll all be rich." And then the poor old fellow took a bottle out of a sack, from which he drank to the

success of his mine, saying, "You'll excuse my not offering it to you. It's only rain-water." The miners and teamsters were all kind to him, bringing in the few supplies he needed and helping him wherever possible, yet there was a deep pathos in the sight of the old man, one foot in the grave, tottering along slowly and carefully, creeping with painful deliberation over the rocky trails, peering everywhere with eyes that should be at rest, for indications of the gold that is to make his grandchildren rich.

I once asked an old and experienced prospector what advice he had to offer to those who thought of going on to the desert in search of the precious metals. His immediate response was, "Tell them to stay at home." He then continued: "To be a good prospector a man must be well prepared in a variety of ways. He must be able quickly to determine the general character of the country over which he passes, hence he must have some knowledge of dynamics, general geology, mineralogy, and chemistry. He must have nerve and backbone, for danger is his constant companion, yet he must be most cautious, for foolhardiness is quickly rebuked on the desert. One day of risk, going without water, or attempting to go too far, may have fatal results. In wandering into these ranges alone one should always put up small monuments — just a few stones piled together — to show the way back to the nearest water-hole, for many a man has lost his life through being unable to get back to where he last watered. The fact of the matter is there are very few men qualified to be prospectors, and that is the reason so few, comparatively, succeed. With most of them it is pure good luck. If they strike anything it just happens so. The major part of the men now out had far better be at home."

After the winter rains the trails often almost disappear. The plants and flowers soon cover what the water has failed to wash away. Then is the time for the prospector to be careful. With such uncertain trails, and the danger of being lured away by the trails of the mountain sheep, he may find himself miles away from his destination and with nothing save his own judgment — which may be good or bad — to guide him over the maze of gullies, ravines, draws, divides, ridges, canyons, and valleys with which he is beset.

One could fill several books with the stories that are told of the peculiar characters of some of the old desert prospectors. Old Quartz Wilson is one of them. He had the prospector's high hopes, and his equally vivid imagination. Every time he came in from a trip he brought specimens of quartz which he solemnly informed you were simply "buggy" with gold. "Why, man, that's thousand-dollar quartz if it's anything," he'd say. That's how he got his name, — Quartz Wilson. His exuberant imagination and enthusiastic eloquence have fooled many a man. He would expatiate on the value of his ore and the extent of his prospect, until those who did not know could vividly see a valuable mine before them. Lured by the golden picture, they would make overtures to Quartz to take them out to see it. Then one should have been present to hear the flow of rhetoric. It was brilliant, and all on that dazzling subject, unlimited gold. Arrangements would be made, teams provided, "grub" enough for a party for a month, and with a confidence born of his own imagination Quartz would drive off into the desert to show his victims his "mine." For by now his prospect hole had developed into a mine worth half a million.

An old prospector

One perhaps may imagine the disgust of the tenderfeet as their illusions were dispelled. Yet even this was done in a tactful manner. Quartz would not take his visitors directly to his prospect hole, but would spend the first day in driving around, —"showing them the lay of the land," he called it. The next day he would give them an idea of the extent of the ore possibilities by showing them all the scratchings he had made, here and there, in the range. Then, as they grew impatient and asked, "But where's the mine, Quartz?" he would be compelled to confess that the only mine he had was a prospect hole. In another chapter I have told of our meeting Quartz at Twenty-Nine Palms, and the fact that although such stories as the above are told of him he is an expert prospector and has discovered some good mines.

It is not my purpose to exploit the mines of the Colorado Desert, and there are too many to describe in detail. I deem it best, therefore, to give the full history of one unpretentious and typical mine as broadly representative of the others. First comes the prospector; he discovers the ledge. If the ore assays well he locates upon it and it becomes his "claim" or "location." This necessitates the doing, each year, of not less than one hundred dollars' worth of work upon it, which is called "doing the assessment," and which must be done annually until the claim is patented. A patent is granted by the United States whenever five hundred dollars' worth of assessment work has been done, and this entitles the holder to surface land, 1,500 feet in length and 600 feet in width, with all the minerals underneath it. If the locator fails to do his assessment work his claim may be "jumped," that is, relocated by some one else. Each year the locator must make affidavit that he has done his work. If this is not done he is liable to lose his claim by another person's relocation. When he secures his patent all assessment work ceases, for the patent is practically a deed to the property, which can henceforth be sold or transferred as any other property. But, as will be seen from the following history of the Brooklyn Mine, the securing of a patent does not make a "mine." The prospect hole must be developed; *shafts* must be sunk, *levels* established, the extent of the *pay streak* discovered, *winzes* (blind shafts that do not come to the surface), *drifts* (tunnels which connect with some other tunnel or shaft and not with the outside), *stopes* (a following of the ore body from one level to another), *inclines* (a sloping shaft leading from one level to another, higher or lower), together with *galleries*, *cross-cuts*, *chutes*, *upraises*, and *air-shafts*, made as required. All this is expensive work, and is called "developing the mine."

In some cases, where large capital is interested, all this is done at once, with as great speed as possible, regardless of expense. But in the case of a smaller mine, or one handled by men with smaller capital, it is the aim, as far as possible, to make the mine pay for its own development. This has been done in the case of the Brooklyn Mine to which I will now devote my attention.

The Brooklyn is a busy little mine of two three-stamp mills

located in the heart of a small canyon of the Pinto range. After a weary twenty-three miles from Cottonwood we rounded the point of the canyon and slowly plodded along up the rough and rugged road to the camp. Up a steep hill cut in the face of the granite, on the side of which the new mill is erected, on to its crest, and there, snugly ensconced in a granite "pocket" we found the camp. Houses, kitchen, dining-rooms, stable, quarters for the men, and the mill, the latter perched on a knoll above the former, had changed the aspect from one of wild, untamed wilderness of rocky grandeur, to one of man's occupancy.

These mines were discovered in 1890–1 by John Burt, an old-time prospector of the district, whose name is preserved in Burt's Lake. In 1892, Burt and Botsford, the latter a mining man of Los Angeles, located several claims in the region and worked them together for some time. They then dissolved their partnership, and in the division of their interests Botsford took these claims as his, while Burt preferred those on the other side of the mountain. Botsford continued to work his claim until 1899, doing little more than the necessary development work required to hold it, though he did ship a few tons of ore to the mill to learn definitely the value of his ore body.

In 1899, Messrs. Ames and Yaeger, two Oregonians who were looking for a mine, and who had traveled through California, Arizona, New Mexico, and part of Mexico in search of what they wanted, decided that these claims would suit them. The price and terms at which they were offered enabled them to handle them, so the transfer was made and they became the owners. Ames was a practical miner and at once proceeded to develop the mines as rapidly as their limited means would allow. A three-stamp mill of the standard type and weight was erected, so that the ore could be worked on the spot. It was found to be rather a difficult ore to work. The ore rests in contact with talc matter, and when this is crushed and wet in the mill it makes a slimy mixture that renders the amalgamation of the gold with the quicksilver very slow. Another disadvantage of the slimy character of the mixture is that the quicksilver amalgamates with the baser and the useless metals and this naturally retards the absorption of gold.

Water for operating the mill and also for domestic purposes

had to be hauled during the whole of this time from Cottonwood, twenty-three miles away, every gallon costing fully five cents, so that the disadvantages of operating can well be seen. For two years, however, the mill was kept in pretty steady operation, enough ore being taken from the claims to pay for the extension work, or the fuller development of the mine. At the end of two years Yaeger sold out his interest, and Ames, with three others, incorporated the "Brooklyn Mining Company," with two hundred thousand shares at one dollar each. The shares were all taken up by the incorporators and none were placed on the market. The new company at once proceeded to put in a water plant of their own. They dug a well one hundred eighty feet deep in the bed of a dry lake, known as Burt's Lake, on the other side of the mountain, seven and one-half miles north, laid pipes to the Brooklyn, installed a pumping plant, with adequate tanks, etc., and were soon raising water from the well to the mine 1,200 feet higher and on the other side of the range. This required a ten horse-power engine, and the pipe used was from one to two inch inside diameter. The daily capacity of this plant was 7,000 gallons; far more than sufficient for all their purposes. It was found that they used about two hundred gallons of water for every ton of ore crushed. In 1904 the "Seal of Gold" Mining Company bought a half-interest in the water and pumping plant (as they were practically without water and the Brooklyn had an excess supply), and a corporation, composed of officers of both mining companies, was formed to operate the pumping plant. A price is charged both mining companies for the water, ranging from three-eighths to one-fourth of a cent per gallon, according to the amount used. After the expenses of operation are paid any surplus in the hands of the Water Company is divided and is thus returned to the owning mining companies. The water is fairly good — for the desert — though the solid matter amounts to eighty grains to the gallon, and the sulphate of lime, chloride of sodium, salts of magnesia, borax, gypsum, etc., give it a taste that is very noticeable to one from "the inside."

Yet the miners tell me that in a week or so after coming to the mine they not only fail to notice the peculiar flavor, but miss it when they return to "ordinary" water.

The mine is now well enough developed to show reasonable promise. The main shaft is down two hundred seventy feet and at the fifty foot, one hundred foot, one hundred fifty foot, and two hundred foot levels, as well as at the lowest level, tunnels have been run and winzes made so that the ore body is largely exposed and ready for "stoping." The ore is quartz in a diorite formation, and the ledge is well defined, though the whole formation is considerably shattered. As before remarked, there is a large amount of talc matter in the ledge.

At the time of my visit in April, 1906, a new mill of a special type for the handling of these slimy ores was being put in place,and ere this it is doubtless in successful operation.

This new machinery has put the mine somewhat in debt, but as all the ordinary development has been made to pay its own expenses, and this has been carried on to such an extent that large ore bodies are already exposed, it is a certainty that a very short time will see all debts cleared off and the mine will then bring in a sure, steady, and substantial return to its owners. This is what I call legitimate mining, an industry that is highly honorable and commendable and as entirely opposed to the stock-jobbing operations of the so-called financiers of our stock exchanges as is the work of the toiling farmer in the field opposed to and different from the wheat manipulators whose chief desire is to "secure" and "hold" a corner.

The difficulties of mining in such inhospitable localities are hard to appreciate. Some of these I have already referred to. But in addition there is the great distance from supplies. Even suppose a mine has telephonic communication with the "inside," that does but little to relieve the pressure. Something goes wrong with the engine, a cam of a machine breaks, a new wheel is required. Everything must stop until it comes. A telephone and telegraphic message is sent to the foundry in Los Angeles or San Francisco. The urgency of the case is stated. The required article has to be made perhaps. Then it must be shipped. If heavy it comes by freight. If lighter, by express. It reaches the nearest station, as, for instance, on the Southern Pacific, Palm Springs, Indio, Mecca, or Ogilby, or, on the Santa Fé, Amboy, Bagdad. From thence it must be hauled either

on the express stage at a ruinously heavy charge, or wait until a wagon can be sent in, — a trip which requires not less than five or six days. So that even when dispatch is used and things come by express at five times the original cost of the article, from one to two weeks are required, while if they come by freight and wagon from three to four weeks are expended. During all this time the mill, or engine, or pumping plant is at a standstill. Other work must be found for the men thus thrown out of employment, as it would be unreasonable to expect engineers and others to lose their work and wages under such circumstances, even if it were not impossible to secure fresh men to take their places were they dismissed or allowed to return "inside."

Picacho (the peak) and Picacho mining camp

Then, too, think of the isolation of men thus thrust out from intercourse with all but very few of their fellow men. The refining influences of women can seldom be felt, for lumber and labor are so expensive that the mine owners cannot afford to make provision for housing the wives and families of their men, and even if they could and did there are few wives who would be willing to submit to the social isolation and physical discomforts of desert life.

Hence many desert mines are favored with little female society, which the miners largely deplore. Yet they are a happy and cheerful lot as a rule, and make the best of circumstances they cannot help. They have their own way of looking at things and also their own names. For instance, a desert miner calls

his valise a "turkey," and if he goes "inside" without his blankets and with only a small valise, or one which contains little, he is said to "fly light."

In writing of the difficulties of desert mining I overlooked the question of fires.

At the Brooklyn Mine they use mesquite for fire-wood. In 1906 they are sending wagons a distance of twelve, fifteen, and eighteen miles for a supply. The superintendent says that his men report it is now so scarce that next year he must plan to secure coal, for wood will be too far away to pay the cost of cutting and hauling.

As we started off from the Brooklyn the superintendent nonchalantly handed to one of the men who was going "inside" a gold brick — not the fictitious, but the real thing — which, he informed me, weighed six and one-quarter pounds. At $200 a pound, this small and insignificant looking brick was worth $1,250.

In addition to the precious metals there are other important mineral deposits on the desert.

Semi-precious stones have been found near Pala, and on the edge of the desert near San Felipe.

Mica has also been found, but not in large enough quantities to pay. Yet I am convinced that subsequent search will find large deposits both of mica and asbestos. These minerals are yearly in growing demand. Mica is becoming extremely valuable owing to the fact that the amount used in the United States has increased very largely. In every electric-light bulb there is a mica washer, mica being the only suitable insulating medium known. It is also used in stoves, lanterns, and Welsbach chimneys. The demand for sheet mica is greatly in excess of the supply, the only mica found in the United States at the present time coming from the mines of New Hampshire and North Carolina.

Ground mica is used in great quantities in the manufacture of mica axle-grease, which is used by many of the railroad companies as packing for oil-boxes. It is also used largely in the manufacture of wall-paper, of fire-proof roofing-paper, and for the packing of fire-proof safes. Ground mica in the East

fetches from three to five cents per pound, and is greatly in demand.

It is almost indispensable in modern manufacture. There is nothing that takes its place as an insulator in electrical machinery. The government uses it as a covering for compasses, and it is sometimes used in windows, as the concussion from the firing of heavy guns does not break it like glass. Mica is used extensively as a covering for steam-pipes, to take the place of asbestos. Nearly all fire-proof material is manufactured with mica as a base, owing to its efficiency as a non-conductor of heat.

Asbestos is equally valuable, and I have seen fine specimens found on the desert in San Diego County.

Plowing salt in the Salton Basin

In one or two places on the desert indications of oil have been found. At one spot these were so pronounced that the finder went to Riverside, organized a company, which sent out a boring outfit to drive a well. The well was driven about one hundred feet down, when a flow of gas was struck. An explosion followed, the derrick was overthrown, and everything wrecked. The work was abandoned and nothing more has been done with it.

In the San Jacinto Mountains, a few miles northwest from Mecca, Mr. J. P. Read discovered a deposit of marble. It was opened and the stone found to be of excellent quality, and of a pure ivory white, almost like a billiard ball. Unfortunately it does not occur in unbroken strata. As far as the mine, or quarry, is now developed the marble is not in large enough sections to

make it commercially valuable. The quality is the best yet discovered on the American continent, and eminent sculptors have declared it equal to the finest Carrara for the purposes of sculpture. As the largest pieces, however, are only about eight or ten inches square, it is practically useless for the art. It is most probable that the breakage or shattering of the stratum occurred during one of the seismic disturbances of which this region is a center. It may be possible, however, that further development of the mine will reveal the marble unshattered and in large mass. It will then become a most valuable property, equal, indeed, to a good gold or silver mine.

Before the great flood of 1905–6 which converted the Salton Basin into the Salton Sea, vast deposits of salt were found near the station of Salton. When these deposits were

The new Liverpool salt-works

first discovered, some thirty years ago, they were found to be unusually pure and free from sediment, and subsequent workings of the stratum have shown that this is a dominating feature of the deposits. It is interesting and important, therefore, to look somewhat into the geological history of this salt and seek for the cause of its deposition and unusual purity. It is generally regarded that there are but two ways of accounting for the existence of a salt lake, viz., 1. That it is caused by the isolation of a portion of sea-water in the process of uplift which changes the sea-bottom to land. 2. By the constant concentration of river-water in a lake which has no outlet.

In the first instance it is readily seen that if there be an uplift of a sea-bottom region so that a portion of it is shut off from the main ocean, the isolated waters will be salt as was the main body. As evaporation takes place the deposition of salt will

Copyright, 1903, C. C. Pierce & Co., Los Angeles, Cal.

THE SALTON BASIN AND THE SALT-WORKS BEFORE THE RISING OF THE SALTON SEA

occur. But as sea-water contains much gypsum, and this mineral is insoluble in saturated brine, it is always deposited first, and upon it occur the successive layers of salt. But in the meantime the rivers emptying into the lake are bringing down their constant supply of sediment and also of more saline matters chemically extracted or washed out of the rocks and soils through which they pass. These are also deposited, so that the beds possess alternate layers of sediment and salt. These are of varying thicknesses owing to the volume of flood waters and the amount of sediment poured into the lake basin.

In the second case the concentration and deposition of the salts and sediments are so complex as to render the salt almost valueless.

The unusual quantity and purity of the deposits in the Salton Basin, therefore, cannot be accounted for by either of these methods, and some other source must be found for their existence. This I am assured is found in the hot salt springs which exist near the mud volcanoes elsewhere described. As there stated, in the very midst of the bubbling quicksands and mud was a large natural bowl into which hot water and steam were being forced as if through a vent-pipe. It hissed and roared so as to be heard for a long distance, and the steam rushed out in large volume. I had no thermometer by which to determine the heat of the water, but it was evidently very hot. The bowl itself was of solid travertin and pieces of it rang musically when struck. Connected with this bowl was a small lake or pond of greenish-looking water. On tasting it I found it so salt that it surprised me into swallowing a mouthful, to my intense disgust. Here, then, we have the source of the salt. The hot carbonated and saline waters carried their burdens into the lake. The carbonates were deposited in the form of travertin, several masses of which are found in the Salton region, while the saline matter was deposited in beds ready for the discovery of man in the nineteenth century, to be worked and mined for a while, and then to be buried again under the waters of the newly formed Salton Sea.

Professor Bailey of the California Mining Bureau calls the barren part of the Salton Basin a "playa." When this portion

of the Gulf of California was shut off from the main sea and formed a lake, as evaporation took place the irregularities of the floor of the lake were ultimately revealed in pools of comparatively small area. The Salton Basin is thus the bowl of the valley, surrounded by its encircling mountains. This bowl naturally received the concentration of salty and other sediments in the water, and when the final evaporation took place the whole bowl was so permeated with chemical constituents hostile to verdure that nothing grows naturally in its area. This soon becomes covered with a coating more or less thick with mud, and these mud plains are *playas*.

The lake that existed prior to the playa Professor Bailey names Le Conte Lake after Professor Joseph Le Conte, the geologist of the California State University, one of the greatest of the world's dynamic geologists.

The New Liverpool Salt Company began work on the salt beds of the Salton Basin in 1884, and produced that year some 1,500 tons. Its location is 75 miles west of Yuma and 180 miles east of Los Angeles, and its elevation is 265 feet below sea-level.

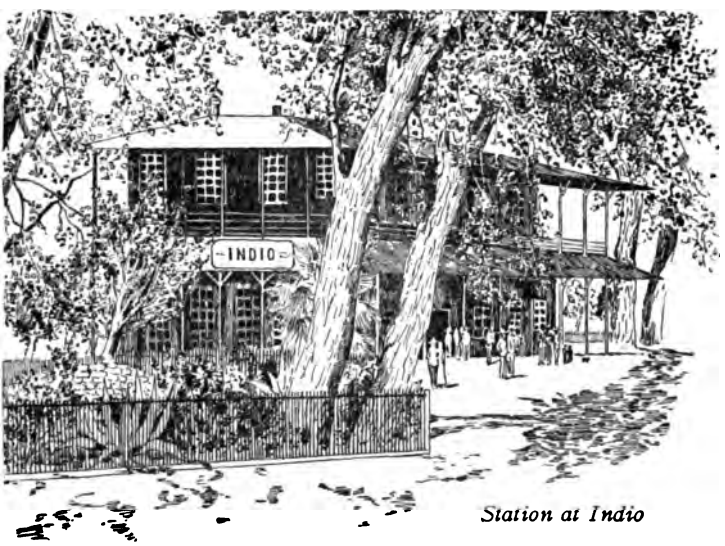
Two analyses of the salt show its remarkable purity, there being an absence of earthy chlorides and sulphates:

Sodium Chloride	94.68	97.76
Sodium Sulphate	.68	.70
Calcium Sulphate	.77	.38
Magnesium Sulphate	3.12	———
Water	.75	.96
Insoluble	———	.20
	100.00	100.00

Owing to this purity none of the ordinary machinery of salt-works was needed, the mill plant consisting only of machinery for grinding and bagging the salt for shipment.

During active operations at the works the sight was most interesting. A number of Coahuilla Indians, strong, finely formed men, did the work. The salt was plowed by means of

plows attached to bands that traveled across the salt bed from one engine to another. The furrows cut were eight feet wide and six inches deep, and each plow was capable of harvesting over seven hundred tons per day. The salt was then scraped up into immense piles and conveyed by a tram railway to the works where Japanese and Indians ground it, sacked it, and shipped it to the various markets. Its price varied from six dollars to thirty-six dollars per ton, according to quality. While there were over a thousand acres of this saline deposit, such was



Station at Indio

the richness of the field that comparatively only about a hundredth part of its area was ever worked. As soon as one crop was harvested, another would flow in from the springs before referred to, and as evaporation was exceedingly rapid a pure layer of salt, from ten to twenty inches in thickness, would be formed.

To show that the deposit must have been from the springs, I give the following results of boring:

1. Below the salt crust was six inches of mud, resting on
2. Seven inches of a crust composed of chlorides of sodium and magnesium.

3. Twenty-two feet of black ooze containing fifty per cent of water, and carrying both the chlorides and carbonates of sodium and magnesium.

4. The rest of the three hundred feet of the boring was in hard clay, with a few streaks of cement.

Burdick in his "Mystic Mid Region" tells an interesting story connected with these deposits that, with a slight addition, is worth retelling here.

Until 1901 the title to the lands was vested in the United States Government, and the Liverpool Salt Company had no title to the property and no legal right to the harvest. A rival company, the Standard Salt Company, discovered that the new Liverpool concern had no title and at once called the attention of the government officials to the fact in such a way that they were compelled to act. The company was ordered to vacate. A bill was then introduced in Congress providing for filing claims upon saline lands, and the bill was duly passed by the Senate, January 22, 1901. While awaiting the signature of the President to make it law, things became interesting on the desert.

Each company had men on land adjoining the salt fields, with location notices written, ready to race to the choicest portions of the field, and post them as soon as the telegraph should apprise them that the bill was signed. Of course each company had its agent at Washington ready to send the news, which would be received at the telegraph station nearest to the salt deposits, viz., Mecca, over twelve miles away.

The Liverpool Company arranged for a gang of men to take out their messenger on a pump-car such as the section men use in doing their work on the railway. The other had a fine team of horses and a buggy ostentatiously in view, close at hand, and it was supposed that the locations would finally depend upon the race between this team and the pump-car. But wit and knowledge made it easier than that. A system of flash signals had been agreed upon, and when the long-expected message came, the one company sent off its locators on the car, while the other flashed its signals with a mirror to its representatives on the ground, so that when their rival appeared the notices were already posted and their efforts were found to be in vain.

After this triumph of the Standard Company a compromise was effected whereby it was placed on an equal footing with the Liverpool Company.

I have elsewhere recorded how the flooding of the Salton Basin by the waters of the Colorado River has completely drowned out the salt-works. Every vestige has disappeared. Even the hot springs that supplied the salt are submerged, and what will appear when the floods are controlled is as yet a matter of mere conjecture.

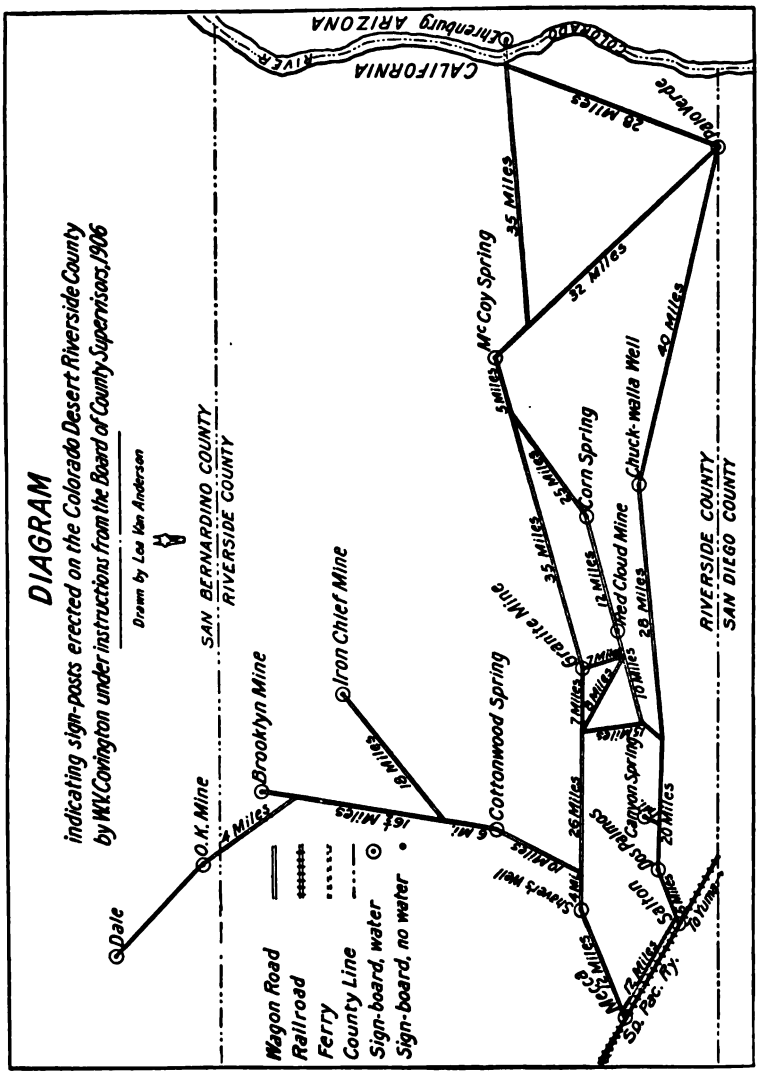


DIAGRAM
indicating sign-posts erected on the Colorado Desert Riverside County
by W.V. Covington under instructions from the Board of County Supervisors, 1906
Drawn by Lee Van Anderson
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
RIVERSIDE COUNTY
SAN DIEGO COUNTY
CALIFORNIA
ARIZONA
COLORADO
RIVER
Ehrenburg
Palo Verde
Dale
O.K. Mine
Brooklyn Mine
Iron Chief Mine
Cottonwood Spring
Granite Mine
McCoy Spring
Corn Spring
Red Cloud Mine
Chuck-walla Well
Canyon Spring
Dos Palmos
Salton
Mecca
Shaver's Well
Sp. Pac. Ry.
To Yuma
4 Miles
16½ Miles
18 Miles
6 Mi.
10 Miles
4 Mi.
12 Miles
26 Miles
7 Miles
8 Miles
7 Miles
15 Miles
10 Miles
28 Miles
12 Miles
35 Miles
25 Miles
5 Miles
32 Miles
35 Miles
28 Miles
40 Miles
Wagon Road
Railroad
Ferry
County Line
Sign-board, water
Sign-board, no water

CHAPTER XXI

Sign-boards on the Desert

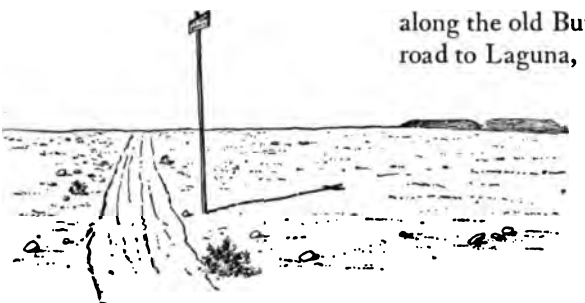
IGN–BOARDS in cities and on roads in populous countries are regarded as imperative necessities. What then must they be to men out on the desert where trails are often obliterated, where there is no one "standing by" to whom you can turn for direction, where there is not a house or a camp for a score of miles, where water-holes or pockets or wells are far apart, often hidden and hard to find, where it is impossible to carry much water, and where the heat is often so intense that to be without water is to court swift and certain death?

Only those who have wildly wandered about hunting for a water-tank, or pocket, or a hidden spring, or have stood in bewilderment at a fork in the trail, uncertain and indistinct at its best, can tell the crying need for sign-posts on the desert. Scores of men have lost their lives through the slight mistake of turning to the left instead of to the right, and as many more have perished of thirst when water was within their reach had they known just where. Yet such is the nature of many men that, just so soon as their own danger and peril are over, they forget the need of others similarly circumstanced, and in the immediate pressure of their own necessities leave "the other fellow" to fight his own battles. But once in a while a man will have an experience that calls forth all his sympathies for his fellow men in similar circumstances. It arouses him to personal action and vigorous agitation as to the needs of his fellow travelers. Such has been the case on the desert. Several city men, used to a sign at every street corner, going out to visit prospects or mines on the desert, improperly guided perhaps, going weary miles on the wrong trail, finding themselves in desperate straits for want of water and want of knowledge as to its whereabouts, have returned to civilization

possessed with a strong desire to better such conditions. They have urged Chambers of Commerce, Mining Boards, City Councils, County Commissioners, State Assemblies, and Senates to remedy the evil and minify the dangers by placing sign-posts on the junctions of the roads and trails and also pointing out where and how far away water is to be found.

The first step in this humane and important work was undertaken in San Diego County.

In 1895, James A. Jasper of San Diego, California, then a supervisor of the Third District of San Diego County, at the expense of the county and district road fund, placed guide-boards a mile apart on the Yuma road from Campo to the Mexican line, and also from the San Felipe ranch, along the old Butterfield stage road to Laguna, where a junction was formed with the Campo line. Each guide-board was of iron and gave not only directions and distances as to the road, but also to the known water-holes on the desert, and was placed on a post made of large gas-pipe which was well-grounded. The directions were painted on the iron, but unfortunately many of them are not legible to-day. It is a great pity that Mr. Jasper's work was not followed up, and guide-posts placed on every road and trail, and especially giving directions to desert travelers as to the location of the water-holes. The need to-day is greater than ever before, for, as the country increases in population, a greater proportion will desire to go out and prospect on the desert for precious metals.



One of Supervisor Jasper's guide-posts

One has but to read the "Precious Metals" department of the *Los Angeles Times* to see the growing interest there is in this subject. An expert is engaged who answers questions about the value of minerals of different kinds. Hundreds of men are

already engaged in prospecting and hundreds more each year go out on the same fascinating but solitary, arduous, and dangerous undertaking.

Where the state and county have failed to make provision in this regard those who have located prospects often put up rude sign-boards of their own. I have often met with such on my desert wanderings.

Sometimes you will come to a trail or road branching off from the main road, and there you will find a primitive sign-board and mail-box, — the latter generally a condensed milk box or one that has held a wholesale supply of patent medicines. The lid is fastened on (when there is one) with leather hinges, and on it will be some such legend as "Please leave and take mail. J. S. Crawford, San Diego and Granite Mine."

What primitive simplicity and faith in man's neighborly helpfulness! If a man is at the post-office thirty-five or more miles away and knows he is coming "by way of Crawford's," he suggests to the postmaster, "You'd better give me the old man's mail." He takes it along and leaves it in the box as he passes by. Another casual passer, going to town, seeing mail in the box takes it and duly drops it in the letter-box when he arrives.

Early this year (1906) Riverside County took hold of the sign-board question in a thorough and businesslike manner. The county supervisors decided it was time to give protection to the small and quiet army of men who seek to add to the wealth of the country by the discovery of the precious metals, and they ordered that sign-boards be placed on every road and trail, and wherever it was deemed wise to direct to wells, water-holes, or pockets on the whole of the desert area comprised in their county. A man thoroughly familiar with the desert, Mr. William Covington, was entrusted with the work of determining where the sign-boards should be placed, the computing of the distances to be marked on the sign-boards, both to mines and water-holes as well as desert settlements, and finally with the work of putting the posts in position. On one of my desert trips I met Mr. Covington and his assistant during this work. The posts were of thick piping, anchored to the ground to iron crosspieces. The sign was of perforated zinc, so that the storms of a thousand years cannot

obliterate the directions given, so long as the posts remain standing. In many instances I tested the distances as closely as I could estimate without instruments, and found them accurate. A mining man recently tested some of them with a roadometer and found them correct. The result is that any intelligent child can now traverse the desert, as far as Riverside County is concerned, and by the aid of these posts go with safety and certainty in every direction. Personally and on behalf of the small army of prospectors and desert travelers I wish to extend to the officials of Riverside County cordial thanks for the performance of this long-needed service, and to assure them that few of their official acts will secure for them more lasting and hearty praise than this.

Old cave dwelling in Tauquitch Canyon

To arouse the state and his own county, Mr. George W. Parsons, a mining man of Los Angeles, after making an arduous desert trip and feeling the need of these signs, at once set to work with characteristic energy to secure official action. February 3, 1904, the Los Angeles Chamber of Commerce, at his suggestion, called the attention of the county officials to the recent discovery of thirty or more victims of thirst on the desert, and urged the erection of sign-boards and the caring for the water-holes. As yet,

however, Los Angeles County has done little. The state has left the matter to the counties.

It is not altogether on the great highways of travel from district to district, where the road is now being well blazed by hundreds of people, that these sign-boards are most needed, but in parts where the lonely prospector finds himself isolated and perhaps lost for lack of some one to guide him aright. Many such a one has perished from thirst when within a few hundred yards of water.

But it is hardly enough to direct the thirsty one to water if he is to find it inaccessible for lack of something to reach it with, or so foul or polluted as to cause man and beast to sicken at its sight and smell. In all the work that has been done by the Los Angeles Chamber of Commerce the greatest stress has been laid upon the last suggested need. Buckets and ropes should be provided and provision made to protect the water from filth and prevent the well from becoming a death trap for animals whose decaying corpses ruin the water.

There are six counties where action is especially needed, viz., San Bernardino, Inyo, and Kern in California, and Esmeralda, Nye, and Lincoln in Nevada.

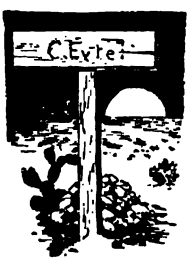
In Nevada the sparsely populated conditions of the entire state in the past has left the long-isolated, little-developed southern counties with but slight funds for any improvements. With the increased revenue from the new districts, mining men hope for an improvement in the conditions that will redound to their benefit.

It is sincerely to be hoped that not another year will pass before this lamentable lack on the desert will be abundantly supplied.

On the trail to San Jacinto Peak

CHAPTER XXII

The Tragedies of the Desert



THE tragedies of the desert are numberless. Its dry sands have taken their large toll of human life even as the sea has taken its toll.

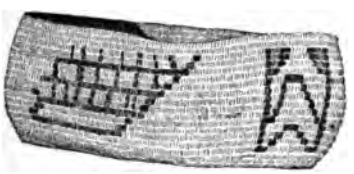
This chapter is not designed to be an historical recital, but merely a suggestion of the kind of tragedies that have occurred. The deaths on the march of those going to and fro, the simple head-boards, their inscriptions cut with pocket knives, and oftener without more than a written inscription, used to be very common on the desert. Even now it is no uncommon thing to read an item in the local papers similar to one which I saw the other day. It told of a skeleton being picked up between McCoy's Springs and the old Chuckwalla Placers. Only the skull and parts of the bones of the trunk were found together. Near by was a gold watch. There was also an unused gold pan with the remains.

A man named William M. Thompson made the discovery and he wrote the officials as follows: "We put the bones in a shallow hole and marked the place with four greasewood sticks tied together at the top with a red handkerchief. We had nothing else with which to mark the remains." This was in December, 1905.

Some time later another item appeared stating that a wagon and miner's outfit had been found not very far (a few miles) away. This outfit was supposed to belong to a prospector and miner named Raidamaker, who had been lost — had totally disappeared — for nearly three years. He had some locations in the desert in San Bernardino County and was on his way there when he was lost. It is explained that most likely his mules got away from him, and he thoughtlessly started out after them

without a supply of food or water. Sure it is that he never returned, and his deserted wagon was left to rust and disintegrate in the sand-storms, winds, rains, and torrid heat of the desert.

This was supposed to be the rational connection between the skeleton on the one hand and the deserted wagon on the other, but the other day (April, 1906) as I came from this region to Dos Palmas I found an old miner and prospector, named Baker, camped there, who asked me if I knew anything further of the skeleton the discovery of which I have related above. When I told him no, he said: "I believe that was a German named Davids who started out prospecting with me thirteen years ago from Yuma. We aimed for the Chuckwalla Mountains. We were strangers to each other, but when we met in Yuma and found we were both on the same errand we made up a partnership and started out. We reached Mule Springs all right, and the morning after our arrival he started out to prospect. He didn't come back that night and I got quite uneasy, so when morning came and I had had my breakfast I couldn't stand it any longer and between nine and ten started off to look for him. I followed his trail for quite a while until a sand-storm came up and I had to quit. The next day I tried again and caught his trail on the flat where the wind couldn't blow it away, but another and fiercer sand-storm came up and it was so hard on me that I had great difficulty in getting back to the springs. I lay there sick for some days and then concluded I had better go back to Yuma. I never could find hide nor hair of Davids, and from the fact that he had a gold watch and a new gold pan same as they say were found with the remains, I put it up that they were his. Poor Davids!"



A Coahuilla basket

What a field for tragic imagination lies in this very simple statement! That a man can be lost for thirteen years and no trace of him be found, and that when bleached and scattered bones are found there are more than one claimant for them,—

this is to suggest the possibility of many desert horrors that can never be written, because they can never be known.

It is not the white man's mental habit to think much of the Indians in connection with the word "tragedy." Let me here bring them into conjunction and present two or three pictures. The first finds two Indian sisters at Palm Springs happy and joyous together as young mocking-birds. Enter a white man. He likes Palm Springs because it gives him health and drives the pale and wan look from his cheek. The Indians are good to him and bid him welcome to all the valley and the desert can give of health and new life. As he improves he "makes love" to the younger of the Indian sisters. By and by they are married — according to Indian custom — and in time three bright, beautiful girls are born to them.

Then, almost suddenly, a change comes. Many other white men, and some women, come to Palm Springs. They have learned of its virtues and there is a "boom." What then does this white man do, who has received health, life, and love on the desert? The craven wretch is ashamed to be seen by his own people with an Indian wife and children, and, like an infamous scoundrel, he deserts them in the dead of the night. At first the deserted wife could not believe it, but when the fact penetrated its way into her mind, it at the same time broke her heart.

Think of it, good sirs and ladies of the superior race. Though she was "only an Indian," she died of a broken heart. Nor was that all of the tragedy of it. Prior to the time of her white husband's desertion she had been noted for the care and devoted love she bestowed upon her children. By one of those strange perversions we cannot always explain, the misery caused by being forsaken turned into hatred to her recreant husband and vented itself upon his children, so that they, poor innocent little ones, had a bitter life until their mother died. Then they were distributed around among the relatives. The mother's sister, Maria, took one of them. She had a motherly heart and immediately poured out the whole of its wealth of affection upon the deserted, motherless creature. She aroused herself to do for it as the white women do for their children, and many a

white visitor at Palm Springs commented upon the neatness and cleanliness of the Indian child, whose prior history they little imagined. When she became of school age Maria was urged to send her to an Indian school, which was done, but unfortunately the child came under a malign influence there. She was soon weaned away from Maria, and though the loving-hearted woman craved her presence, the girl was taught that it was far better for her never to go back to the reservation. Several years elapsed. The school was closed and the Indian children moved to the Sherman School at Riverside.

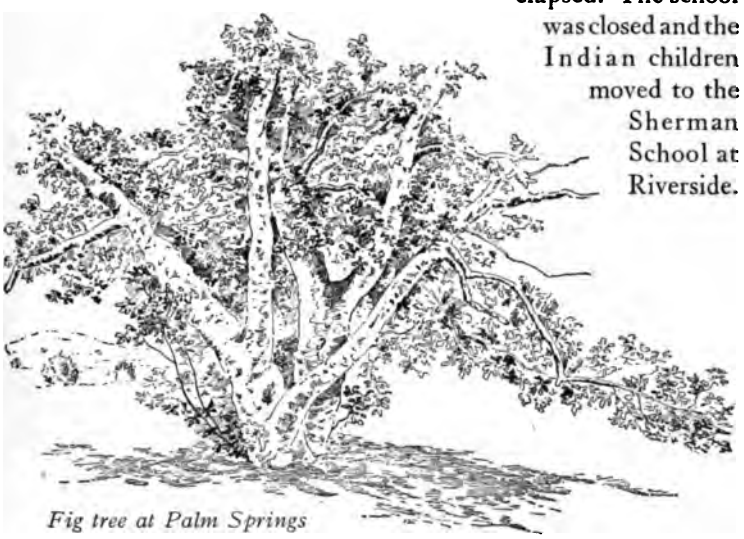


Fig tree at Palm Springs

Here, though the influence was of a decidedly different character, the estrangement of the girl from her aunt was completed.

In the meantime Maria longed to see her beloved niece (whom she had long regarded as her very own) with such a fervent longing that she became sick and soon developed a mild form of melancholia. Her brother sent a message to the school asking that the girl be sent home for a while, but no attention was paid to it. Then Dr. Murray was asked to intercede, and with the large heart of a true humanitarian, he wrote and begged that the child come home to save her aunt from complete dementia. He might have told, had he been aware of the facts, that poor

Maria was in the habit of getting out the baby clothes, the shoes and stockings of the child to whom she had given a mother's love, and wailing over them, as the Indians do over their dead.

Weeks passed and Maria rapidly became a hopeless lunatic, crazed through unsatisfied affection and the absence of her child. Dr. Murray wrote again, and this time his plea was so urgent that the girl was sent. She brought her mandolin with her, upon which she had become an expert player. She had grown to be a "fine young lady," but there must have been much of her heartless father in her, for she was very unhappy with her demented aunt and begged to go back to school.

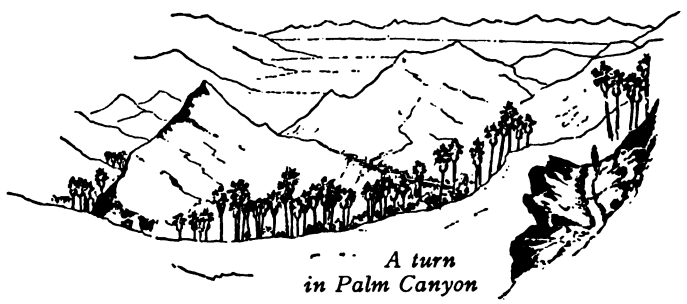
And now, when her brother is away, Maria still gets out the baby clothes of the child she loves and in a voice that is piteous in its sadness and despair she wails in her unquenchable grief. Then she forgets her sorrow, and in a wildly boisterous manner that alarms and arouses the whole village she sings the happy songs she and the child used to sing in the days when they were happy together.

And I, who have heard both the wailing and the singing, am unable to tell you which is the more sad. They both tell of a desert tragedy.

What numberless tragedies men's culpability has caused, and equally numberless those resulting from men's evil passions! The desert has seen its share of both of these. One of the earliest is that recorded by J. R. Bartlett of the Boundary Commission. As Colonel Craig, of his escort, was crossing the desert from Alamo Mocho to Yuma he came up with two deserters from Fort Yuma. He endeavored to persuade them to return, but they vowed they would never go and would shoot any one who attempted to arrest them. With a desire to conciliate them, Colonel Craig threw aside his weapons and was stepping up to them with the kindly offer that he would try to have them attached to his command, when his mule, being left alone, marched off some fifteen or twenty yards. The colonel directed Sergeant Quin (who with Sergeant Bale were his only companions) to stop him, and as he did so thus separated himself from the officer. In a moment Quin heard the report of muskets, and, turn-

ing, saw the deserters, who had just fired, and the colonel staggering and about to fall. Bale discharged his revolver at the deserters, but his mule prancing about, his aim was ineffective and Quin saw him also fall. He at once put spurs into his horse and made his way to Bartlett's camp as fast as possible. But that was thirty miles away.

And in the meantime over the prostrate body the inexorable sun shone on with unrestrained fury, the winds blew as if they knew not the silent figure; the curious lizards darted to and fro and the rattlesnake sounded his warning, not knowing that all earthly warnings were in vain. The night came and the pitiless stars and the unconscious, baby faced moon gazed down without



A turn in Palm Canyon

a sign of sorrow, and people far, far away gazed into the blue distances of the desert, never dreaming what lay out yonder so quiet and so still.

It was ten o'clock the following night before the detail found the body, and soon after the wounded sergeant, who had been allowed to go by the murderers. On their return to camp a deep grave was dug and the body of Colonel Craig was consigned to it. There was neither mound, rock, nor tree to mark the spot; a dreary solitude reigned: so to identify the grave a wooden cross was erected at its head on which was inscribed:

"Lieut.-Col. L. S. Craig, U.S.A.
Died June 6, 1852."

The murderers were afterwards caught by the shrewdness of an Indian chief, who, with his people, had been sent to hunt for them.

Professing friendship for the men the crafty Indian proposed to buy their muskets, which the deserters gladly sold. But as they had a revolver and it was necessary to disarm them of this, the chief expressed curiosity and requested to be allowed to see it. His apparent simplicity completely lulled any suspicion the deserters may have had, and they put it into his hands, when, immediately, he stepped back, leveled it upon the murderers, gave his signal cry and in a moment his hidden followers sprang in and arrested the two men. They were finally taken to San Diego, tried, and hanged in the presence of a large number of people.

But there are other tragedies that have no violence in them, and some of these are exceedingly sad. These tragedies come from ignorance. Men come and attempt to establish themselves in the desert and spend all they have in planting out things that will not grow. The sadness of such disappointments has often brought death; the weary continuance of the struggle has often prolonged the agony of death, and but few have moved on with courage enough to start afresh the battle of life under newer and less difficult (to them) conditions.

In Palm Canyon

Some of the saddest desert tragedies occur when those who could have been helped by the desert in pulmonary troubles come too late. Why will men and women delay facing the inevitable? Is it cowardice or fear lest they frighten the loved one? Which is better, to wait until the disease has secured so thorough hold on the body that death is almost certain, or to startle the patient and get him to a place of helpfulness before it is too late? I could write several large books recounting the stories of those who came "too late"! What sad words these are, and often how unnecessary! And yet in many instances one says them the moment his eyes fall upon the victims of cowardice, indecision, or criminal reluctance to warn the invalid. Such a case occurs to me now, of a bright and beautiful girl, born of

wealthy parents who could gratify her every desire. She was a proud and studious girl and resolved to win high honors at her school and then take a university course. Competitive examinations, the determination to surpass her comrades, and the fear of failure impelled her to work beyond her strength. She won the examinations, surpassed her comrades, entered the university, and — broke down, with affected lungs. Her parents buoyed her up with the hope that she would soon be well, and instead of taking her where the soothing and healing air of the desert would have given her new life, they resolutely refrained from giving her the slightest idea that she was in any danger. At last a violent hemorrhage demanded immediate action. The family physician sent her to Palm Springs. But it was far too late. Soon after she arrived the overworked body gave way and the spirit took its flight. It was decided to send the body home for burial. On the day appointed for this, a young man with his two sisters, both afflicted with pulmonary disease, were expected at Palm Springs. It was deemed unwise to shock them by allowing them to see the casket as they landed at the place where they hoped to regain their health, so, as there was an uncertainty as to the exact arrival of the train, a carriage was sent to meet them, while an Indian drove a wagon, on which was placed the casket bearing the body of the unfortunate girl, around by the mountains, so that it could reach the station by another route. Cared for by an Indian, dead, on the desert, hopes, ambitions, aspirations, beauty, achievements all gone, as far as this earth was concerned, here, indeed, was tragedy. But perhaps it mattered not to the dead girl with whom she rode, in what kind of a vehicle, or how she went and by what route: all drivers, vehicles, and routes were the same to her. It was the poor girl's "last ride."

CHAPTER XXIII

The Camp-fires of the Desert

AMP-FIRES are always delightful, romantic, and pleasant, but never more so than on the desert. When the pure pall of semi-darkness slowly falls and covers the clear brilliancy of the day and nothing but the dark shadows of the palms, the rocks, the trees, the wagons are to be discerned, the bright fierce flames of the camp-fire rise with peculiar charm and fascination. The breeze blows the flickering flames this way and that, as if in rude rhythm, and the picture is one which once seen will never be forgotten. Here is a tiny handful of men—in our case there were but two or three of us—in the heart of this desert solitude where even the silent stars sometimes seem so far away from the activities of men that they must have lost their way, and one thinks of the cry of the mate of Columbus:

> "Why, now not even God would know
> Should I and all my men fall dead.
> These very winds forget their way,
> For God from these dread seas is gone."

Yes! but is this being out in the heart of the great freedom that constitutes its allurement? No one is looking on, no one is criticising, no one is requiring you to be any other than you are. Here, at least, if you will, you may be yourself. And God is over all. There is no sense of aloneness, no sense of solitude: it is simply an overpowering, joyous sense of a great and glorious physical, mental, and spiritual freedom. The only laws, the only restrictions, the only restraints are those which God has indelibly written upon each human heart. With me there is such a sense of the presence of God on the desert that I always feel the farther

I go, the farther I get from the influence of men, the nearer I get to God.

By this I would not have my readers think I am a misanthrope, a recluse, a hermit. I have none of that blood in me. I merely long, at times, to be free from men and women, to get away from man-made laws and conventions to original things, to look again at my prime bearings, and then go back into civilization and take up my share of the white man's burdens.

It is around the camp-fire in the dusk of the evening, when supper is over, and one feels the comforting influences of a good meal, that men's tongues are loosened and stories of all kinds are told. The camp may be in the open, or under the shadows of a great rock, or in a canyon under sheltering trees. Where it is matters not much so long as the influences are there, — the gentle crackling of the fire with the occasional spurt of flame; the dim light; the careless, lounging attitudes of the men, some sitting against their blankets, others stretched out at full length, their chins propped up by arms and hands, another leaning against a tree, and still another holding himself by the knees; pipes or cigarettes lighted by the lovers of "the weed"; the mournful coo of the dove; the munching of the horses as they diligently masticate their quota of hay or grain; the gentle evening breeze, cooling yet not cold; the occasional bray of a burro who wishes you to know that he is not near enough to the hay, — all these and the more subtle influences of the desert, the solitude, the mystery, the evening stars, the entire absence of all civilization or evidences of the existence of other men than the few here gathered, tend to evoke those stories of imagination, of travel, of horror, of peril, of adventure, of experience, of fact, of fiction, that constitute the charm and delight to almost all men who have experienced it of the desert camp-fire.

It was at the camp-fire that I first heard the story of Pegleg Smith, of the Breedloves, of Riley and hosts of others. It was in the half-glow of the camp-fire that I learned fresh details of the Mountain Meadow massacre, of the Death Valley experiences, of the Donner Lake horrors. There many a discouraged prospector has told of his miles of weary travel, his disheartening experiences, his boundless hopes, his perils, his few trivial successes.

There, too, you learn somewhat of the difficulties and dangers of the teamster's life, the accidents on mountain slopes, the upsetting of wagons, the fording of dangerous streams, the sinking into treacherous quicksands, the sufferings endured by man and beasts when, in the almost intolerable heat of a desert summer, an expected spring is found to be dry, or an accident has ruined the precarious water supply.

As I read over the pages I have written about the explorers and pathfinders of the early day I see many and varied camp-fires. Think of the camp-fires of the weary soldiers of Kearney and Cooke as they journeyed to the land of promise in the days of the first American occupation of California. Cooke's soldiers were Mormons and they whiled away some of their time in singing. At their camp-fires they sang the songs of their new Jerusalem, the songs of their church with a zeal that deserts could not destroy and rivers could not quench. But now and again as they first stole around the camp-fire before their preachers had had time to begin their exhortations, once in a while one of the lighter spirits would start the song with the rollicking chorus in which they all joined:

> "How hard, to starve and wear us out
> Upon this sandy desert route."

But by and by these sounds were hushed, the solemn hymn rose on the evening air, and soon the voice of the earnest and zealous Mormon preacher rang out over the sandy wastes. Those were, indeed, camp-fires of a far different type from those of the early Spanish colonists, though at both the worship of God in religious ceremony formed an important part.

The bandit and stage robber have had their camp-fires on the desert. But they must be built where the eye of no hunting officer or sheriff could see. In the shelter of some rock or down in a dry arroyo a tiny fire was built for the cooking of the evening meal or to tell over the spoils. See them, these bloodthirsty and cruel men. They tell with glee how they made their hapless victim suffer, how they tortured him until he revealed where his wealth was kept; how they stole upon the unsuspecting traveler and drove the knife up to the hilt into his back and he died and

"never knew what had struck him"; of the stage held up and how the scared passengers lifted up their hands while one of their own number went through their pockets, gathering the spoils for the lone highwayman.

And they drink and carouse, perhaps, and forget they are being hunted. They found the seductive liquor on the stage and cannot resist the temptation to "drink it down" and forget everything but their noisy mirth. "Throw on more wood! Never mind the light! We're safe enough! Pass around the bottle!"

A Coahuilla basket-maker

And, suddenly, the crack of guns peals out and one after another they fall over. One or two spring to their feet and start to run, but the swift bullet is swifter than they, and ere they can escape they are brought low, one of them falling over into that camp-fire, a horrible sacrifice to the desert purity he and his companions have so shockingly violated. And time and space would fail me to tell of the camp-fires of the pioneers before '49 and those who came for gold and those who finally came with their families to make California their home. As I have sat at my own solitary camp-fire I have seen all these scenes and many more. I have peopled the desert with phantoms that are real. Here, in the awful stillness and solitude, imagination has full play. Memory and imagination have wedded and brought forth children that are more real than physical things. These have taken possession of my

camp-fire. The silent desert is the unreal thing, for how can it be desert, deserted, silent, still, with these living presences, acting, moving, loving, hating, before me?

One of the strangest camp-fire stories I ever heard was that told by the "Ananias of the Desert," whose bright invention has cheered many a weary hour. It was told with so earnest an air of truth that I believe the teller himself believed it. I give it as it was told.

"When travelers go to the Torres Indian reservation they will find an old Indian who sits in calm equanimity and listens to their ofttimes foolish vaporings. For it cannot be denied that some most silly things are said by white people about Indians in the presence of the latter. It is then rather astonishing to hear from this rather sardonic-looking old Indian the question expressed in perfect English or French: 'Were you ever in Normandy, madam? Are you not aware that we but do here what the peasants do there?' Such a question and remark, from such a source, is generally a staggerer, but few people are able to learn anything of the Indian who thus addressed them. But here is the story as it came to me. This man's name is José. When a young man he is said to have gone to a fiesta in Los Angeles. There he tasted of the red wine and it seemed very good and sweet to him. When again pressed to drink it was of the white wine, and that was equally good and sweet. 'But,' said he, in telling the story, 'my mind was not my own after that. Somehow I found myself in a strange country where I saw things I had never seen before. I was where the desert was of water, not of sand, and great vessels were moving noiselessly to and fro over its surface.'

"It is evident he had either wandered or been taken to the port of San Pedro, most probably the latter, for the next thing he remembers is that he was on board a vessel, far out at sea, bound for the Orient. While he thought he was enjoying himself he had been shanghaied. For several years he was kept on board the ship, and there learned to speak good English, — not from the sailors, but from one of the officers who took an interest in him. The captain, however, watched him so closely when they were in port that no opportunity was given him to escape, until

after several years they happened to be in a French port, and there the long-looked-for chance arose. José seized it, and a few hours' wandering found him a free man again in the heart of pastoral Normandy. He met with friends, engaged with a farmer to help him, and before long was speaking words of love in true Normandy French to a maiden upon whom his eyes had longingly fallen. She was not averse to his dark skin, and never knew or dreamed, perhaps, of his Indian birth, and he never told, so that when, a little later, he proposed marriage, the parents of the girl made no objection and the wedding took place with all due solemnity.

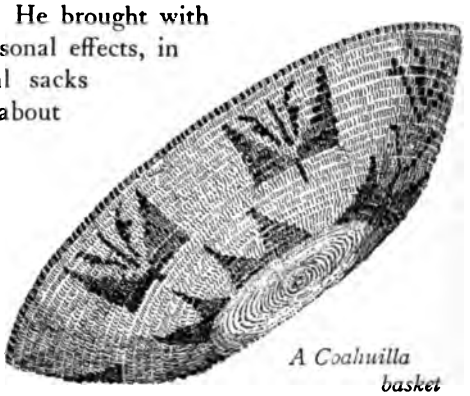
"Who says an Indian has no power of adaptability? Here was one who not only learned the language, but adopted the customs, and, at least as far as exterior goes, the religion of the people of his new land so that he virtually became one of them.

"See him now, for a dozen years or more, settled down as a farmer, with a small family growing up around him. For a while everything went well. The years rolled on and no one supposed that he was not contented and happy. Perhaps he never even dreamed of it himself. But by and by that ferment in the blood we cannot explain or understand, that 'call of Nature' made its subtle and gentle, though powerfully overwhelming voice heard, and José, all at once, felt he was 'not at home.' His home was elsewhere, — near the waters of the Pacific. He had forgotten many things, and his home tongue had almost entirely slipped from his memory, yet he knew enough to think he could find his way back to his birthplace if he once cut loose.

"No one can ever tell from the old man's way of telling the story whether he felt the severing of the new bonds or not. He says he left when everything was happy and prosperous and found his way into a port in Belgium. Here he shipped on board a German vessel which was carrying a load of cement to California. In due time the ship reached San Diego, and José lost no time. Not being watched, he escaped to the hills, and there fortunately came in contact with some old squaws whose features reminded him of those he had left at home so long ago. He asked of them how far away was Tauquitch, and they told him 'two days.' He secured a horse and in forty-eight hours the snowy forehead of

San Jacinto Mountain loomed before him. A few hours later and the mesquite huts of Torres were reached. Without a word he shed the life of recent years as a snake sheds its discarded skin, reëntered upon the life of his people, and now, save when his sardonic humor asserts itself, one would never dream that the old Indian sitting so quietly in the shadow of his *kish*, smoking his cigarette, was a world-wide traveler, the hero of a romance in France, and even now, perhaps, longed for and mourned by a sad-hearted mother of children in the fruit orchards of far-away sunny Normandy."

Two others of Mr. Tingman's camp-fire stories must find place here. "A gentleman from Ohio came here and filed on a desert-claim. He brought with him a car-load of personal effects, in the which were several sacks of fine pop-corn and about two hundred blooded chickens. A barn was built and a corral for the chickens, and the pop-corn was put in the former and the chickens in the latter. One morning when the proprietor went out he found a number of his valuable chickens with their heads off. He hunted around but could find no sign of the heads of his unfortunate chickens. In great distress he called in his neighbor, who at once began to look around for the cause of the disaster. Stepping into the barn he saw some of the pop-corn loose in a box. 'What's this?' he asked. 'It's corn,' replied the owner, 'pop-corn: I brought it from the East.' 'Popcorn?' exclaimed the neighbor. 'That explains it all! Your chickens got to that pop-corn and then went out into this desert sun and it was so hot that the corn popped and popped their heads off.'"



A Coahuilla basket

When the laughter at this had subsided, Tingman told another of an old lady who had promised to bake a cake for a church sociable. Said he: "The old dame came into my store and asked

for some unbleached muslin. I measured it off and gave it to her, when, to my amazement, she began to cut it up into tiny little bits. 'What's that for?' I asked. 'Why are you ruining that fine muslin?' 'Oh!' said the old lady, with a sweet and simple smile, 'I'm making little bags so that I can fill them with cracked ice to tie around my hens' necks!' 'Cracked ice? To tie around your hens' necks?' I cried in perfect astonishment and bewilderment, 'what's that for?'

"'Oh, don't you know,' she replied with a smile that now was 'child-like and bland,' 'that that's the only way to get fresh eggs. If I don't put the ice on, the only eggs I get are hard boiled ones!'"

This led one of the others to tell a story on Tingman, which the latter boisterously declared was "honest truth." Tingman had a burro which was very fond of home, so much so that when he was once sold it was not many days before he came back. The purchaser on his return demanded repayment of the amount he had expended on the burro, but Tingman compromised on half. It happened to be a time of great activity among prospectors and they piled into Indio at a lively rate trying to buy burros. Tingman hit upon a great scheme. He sold the burro with the distinct understanding, signed as an agreement, that if the burro came home he was to retain it. Sixty times — "by actual count" — the burro was sold and — came back. At last a German bought it who was familiar with the burro's "returning home" habit. He vowed the burro should never return on him and for three days and nights he watched, and when he found the crafty animal making a break for home, he deliberately shot and killed it.

Tingman now contemplates erecting a monument to the memory of the burro.

Photo. by Putnam & Valentine, Los Angeles, Cal.

CUTTING ALFALFA ON THE COLORADO DESERT

CHAPTER XXIV

The Reclamation of the Desert, in the Imperial and Coachella Valleys

EACH visitor to the desert has his own ideas as to the possibility or probability of its future reclamation. That all the desert will ever be "reclaimed" I do not believe. There are other utilities in life than those based upon commercial returns. It would be a tremendous pity to reclaim all the desert. We need it for other and better things than growing melons and corn. It is required for the expansion of soul, the enlargement of vision of perhaps only a few men, but those few will help influence and benefit the world. Elijah's retirement to the desert gave him the power that led to the emancipation of his people from a great ecclesiastical tyranny. Mahomet's desert experiences gave the world a new religion. Christ's forty days and nights in the wilderness renewed his spiritual power. The close proximity of the desert to the growing cities of Southern California is one of the greatest of blessings. Though, as yet, unappreciated and largely unknown, it is waiting to pour out of its largeness into the hearts of the few men and women who will ultimately come to learn from it the lessons that will better fit them to lead the people of Southern California to higher and nobler things.

Yet it is good that man seeks to reclaim the desert. All his efforts will benefit him, no matter what their influence may be on the desert itself. The first scientific presentation of the subject in the United States was made by Major J. W. Powell,

the hero of the Colorado canyons explorations, who in 1878 published his "Lands of the Arid Region." With a foresight that was far ahead of his time this wise and good man counseled the government's control of the arid lands, absorption of suitable reservoir sites and erection thereon of adequate reservoirs, conservation of water supply, whether the constant flow of rivers, creeks, or springs, or the torrential downpours of intermittent seasons.

In the Colorado Desert region the first intelligent efforts to this end were made forty years ago by Dr. O. M. Wozencraft of San Bernardino. He was a pioneer who, in crossing the desert, saw its great possibilities, provided it could be irrigated. He was a man of marked personality, far-seeing vision, and lived a generation before his time. He sought to obtain from Congress a grant of land for the carrying out of his plans, which included practically what is now the project, in the main, of the California Development Company. His scheme was looked upon by most of the members of Congress as visionary, and though the experts warmly advocated his plans, the "wise politicians" regarded it more in the light of a joke than as a serious project to be entertained with due consideration and dignity. The result was, the doctor frittered away his fortune in his endeavors and all in vain. Even so able a man as J. Ross Browne had his sarcastic fling at the scheme when he said: "Still I can see no great obstacle to success except the porous nature of the sand. By removing the sand from the desert, success would be insured at once." I invoke his shade to witness what has been done, *without removing the sand*, and I doubt not he is now hanging his head in shame, provided, of course, that shades can hang their heads in shame.

Yet the efforts of Dr. Wozencraft were not in vain. They were a stimulus and incentive to others, and finally his *visionary* scheme was taken hold of and is now on the way to one of the most marvelous of successes.

Twenty years or so ago Dr. Wozencraft's plans were resuscitated by John C. Beatty, who organized the Colorado River Irrigation Company. He engaged as his engineer to make reconnaissances and surveys C. R. Rockwood, then in the em-

ploy of the United States Reclamation Service. Mr. Beatty was a man of large foresight, but not being able to properly finance his plans they fell through, his company became involved in litigation, was ruined, and the entire project abandoned. Mr. Rockwood's surveys were sold under the auctioneer's hammer and bought in by Dr. Hefferman of Los Angeles. Mr. Rockwood, having by his surveys become thoroughly interested in the scheme, now determined to interest capital to promote it.

In 1896 the California Development Company was organized for the purpose of reclaiming what was then called for the first time "The Imperial Valley." This valley reaches from the Mexican line on the south to where the Alamo and New Rivers come near together before emptying into the Salton Sea on the north, and these two rivers practically form the eastern and western boundaries. Approximately 500,000 acres of land are

Headquarters of California Development Company, Calexico

included in this region. The Development Company, however, did not own or control any of this land, nor did it seek to do so. It was purely and simply a water corporation, organized for the purpose of bringing water from the Colorado River to the land of the valley, which, being government land, was open to entry and settlement as all other such lands were.

As it was found that the main canals of the company would have to flow for many miles on Mexican soil, a concession was secured from the Mexican government to a branch of the Development Company, generally referred to as the "Mexican Company." The terms of this concession required that a headgate for the taking of water from the Colorado River should be established and maintained in operation on the Mexican side of the line, as well as the one contemplated on the California side.

The company had undertaken a gigantic task. Fortunately, as I have shown elsewhere, Nature in prehistoric times had pre-

pared much of the way in raising the Colorado River, by the uplift of its own sediment, high above the lands that were to be

MAP of Southern California and the Imperial Valley.

irrigated, and then, as if in anticipation of this very scheme, had later on cut a river channel in the required direction, which

for some forty or fifty miles could be used as a canal for the conveyance of water to the Imperial lands.

The upper part of this river and the New River could also be utilized for conveying the waste water, seepage, or overflow into the dry bed of the Salton Basin, it not being thought at that time that there would be a larger flow than the rapid evaporation of the desert could care for. All these facts were discovered by Mr. Rockwood in his surveys.

The question then arose before the company: How can we arrange matters so that the settlers in the valley can secure water at once for the development of their land, and at the same time arrange, in time, to own themselves the various canals, head-gates, etc., that compose the irrigation systems on their own lands?

Here is the company's explanation of its method:

"In order to place the ownership of the distributing systems of canals and ditches in the hands of the people who were to use the water, so that they could manage its distribution in their own ways, the system of mutual water companies that has grown up in so satisfactory a manner under the liberal laws of the state of California was adopted.

"A mutual water company is a corporation organized for the purpose of furnishing water to its stockholders only at cost.

"It was not deemed feasible to place 500,000 acres of land under one mutual water company; hence several of these mutual water companies have been formed, each one to supply water to a particular locality, and these localities or districts have been outlined largely by the natural topographical features of the country.

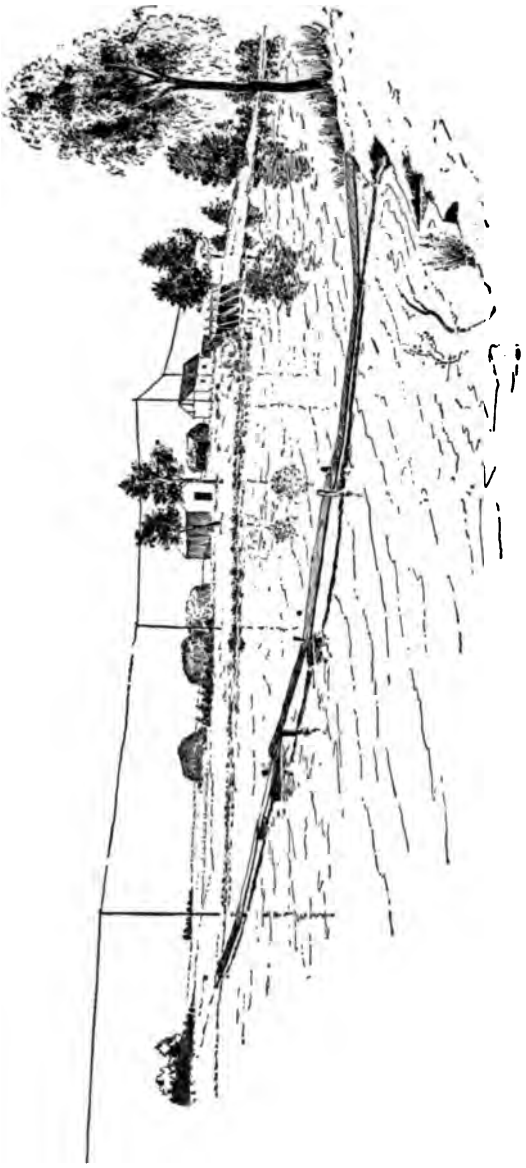
"Eight of these corporations were formed, but only seven of them have been thus far utilized. Each corporation is known by the name of Imperial Water Company and then numbered, as Imperial Water Company No. 1, Imperial Water Company No. 8, etc. Numbers 1, 2, 4, 5, 6, 7, and 8 are live corporations, while No. 3 has been merged into No. 1.

"Each one of these mutual water companies makes a contract with the California Development Company and the Mexican Corporation, under which these corporations are to deliver a supply of water perpetually to the mutual water company at the

fixed price of fifty cents per acre-foot — fifty cents for enough water to cover an acre of land one foot in depth — which is equal to about two cents an inch for a twenty-four hour flow of water — the cheapest water on the Pacific Coast.

"The California Development Company also provides for the construction of the distributing system of canals and ditches for the mutual water company, taking the stock of the mutual water company in payment of such work. This stock is sold to the settlers at the rate of one share of stock for each acre of land to be irrigated. The mutual water company is thus provided with a water supply and a system of canals and ditches free of indebtedness. There is one exception to this rule. Imperial Water Company No. 8 paid for its system of canals and ditches with twenty-year six per cent bonds, and the landowners get their stock for nothing by investing in the bonds of the corporation to the extent of only one dollar per acre, as a matter of showing good faith in taking water stock for which they pay nothing.

"So far as water rights and cost of water are concerned, these mutual water companies are all on the same basis. Imperial Water Company No. 1 was incorporated to irrigate 100,000 acres of land located between New River on the west and the Alamo River on the east, and extending from the International Boundary Line on the south to a short distance north of the town of Imperial on the north. Imperial Water Company No. 4 was formed to irrigate 17,500 acres of land between the two rivers, adjoining No. 1 district on the north. Imperial Water Company No. 5 was incorporated to irrigate 100,000 acres on the east side of the Alamo River, but later it was thought best to confine the work of this company to about 50,000 acres, as it is thought that, as a rule, that area is enough to be placed under one water company. Imperial Water Company No. 6 was formed to irrigate 25,000 acres of land on the west side of New River, near Signal Mountain on the International Boundary Line. Imperial Water Company No. 7 was formed to irrigate 20,000 acres of land next to the International Boundary Line, on the east side of the Alamo River, and south of the Eastside diversion dam. Imperial Water Company No. 8 was formed to irrigate 40,000 acres of land on the west side of New River, in a northwesterly



Main canal, near Imperial

direction from the town of Imperial, and directly west from the town of Brawley, which is located on the Imperial branch of the Southern Pacific Railroad.

"Under the contract for a water supply, these mutual water companies are entitled to receive each year four acre-feet of water for each share of outstanding stock, and are required to pay for at least one acre-foot of water each year for each outstanding share of stock, whether the water is used or not.

Typical ranch-house in Imperial Valley

This clause was inserted in the contract for the purpose of discouraging speculation in the water stock and land, for, if the owner is required to pay fifty cents an acre each year, it will be a very strong inducement for him to improve his land, use more water, and thus build up the country, and not only make his own land more valuable, but to also increase the value of the land belonging to his neighbors.

"The stock of these various mutual water companies—except Imperial Water Company No. 8—is held at the same price, which in August 1, 1903, was $20 a share, on the following easy terms of payment: Cash, $5.00 a share at the time of purchase and $3.00 per share on the first day of July of each year until the balance is paid, with 6 per cent interest on deferred payments. A discount of 10 per cent is allowed for all cash. This price and these terms are subject to change without notice.

Flume carrying the canal over New River

"Each landowner gets what water he needs at the cost price to the company, plus a small sum to pay cost of distribution and

administration of the affairs of the mutual water company. This last item ought not to exceed 25 cents per acre per year.

"It is believed that alfalfa, which requires more water than any other crop, will not need more than three acre-feet of water to each acre of land each season. This will cost the ranch owner about $1.75 per acre — $1.50 per acre being the fixed price, and 25 cents per acre being the cost of management and distribution.

"For an abundant supply of water at all times this is considered to be the cheapest water to-day in the United States, and it is not believed that works constructed by the government could furnish water at a less cost."

In 1899, William E. Smythe, in his "Conquest of Arid America," thus wrote of the reclaiming of the Colorado Desert: "It is popularly regarded as an empire of hopeless sterilty, the silence of which will never be broken by the voices of men. As the transcontinental traveler views it from his flying train it presents an aspect indeed forbidding. Neither animal life nor human habitation breaks its level monotony. It stretches from mountain range to mountain range, a brown waste of dry and barren soil. And yet it only awaits the touch of water and of labor to awaken it into opulent life. Much time will be required to overcome the wide and ingrained public prejudice against the Colorado Desert, but it will finally be reclaimed and sustain *tens of thousands* of prosperous people. It is more like Syria than any other part of the United States, and the daring imagination may readily conceive that here a new Damascus will arise more beautiful than the old."

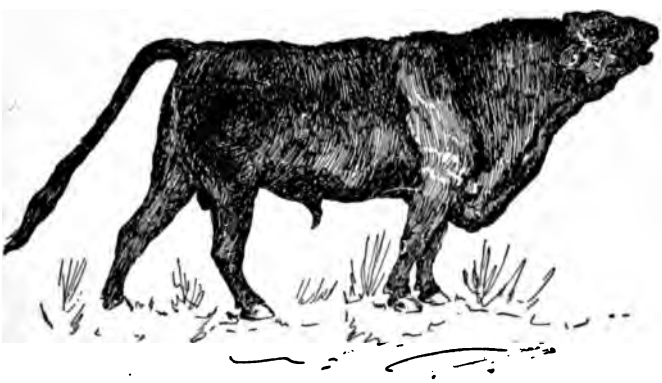
As early as 1853, Professor Blake wrote that "there can be no question of the fertility of this region, and of the clay soil of the desert, at any point where water can be obtained in sufficient quantity for irrigation."

See then the water being provided. Early in 1900 not a stroke of work had been done by the California Development Company owing to the lack of finances. Even then it began work with assurance of but a small portion that would be required to complete the system. It was March, 1902, before water was turned into the main canal for irrigation, and yet in September, 1904, the company had constructed and were operating over 700 miles

of canals and ditches and had brought into the Imperial Valley about 8,000 settlers, and had in crop nearly 75,000 acres.

The fertility of the soil was at first somewhat questioned by government "experts" sent out to make tests. The department made a mistake in sending young and inexperienced men to do this work, for in less than a year their "official" prognostications were discredited by the actual growths of crops in places where they had practically prophesied failure.

I now speak of that which I have personally seen. Alfalfa grows six to eight crops a year, yielding from one to two tons of cured hay per acre at each cutting. Wheat and barley at first did



An imported Galloway bull on the desert

not do very well. The farmers did not fully understand the new conditions. The second year, however, showed such capacities that I know of one farmer who, alone, in the third year and ever since, has planted not less than 2,000 acres of barley. Milo maize, sorghum, Kaffir corn, and millet are fine forage crops, and it is no uncommon thing to plant barley in the winter and, after harvesting, put in these as a summer crop.

Score of tons of cantaloupes, melons, sweet potatoes, and onions were grown this year, 1906, and they equal in richness and flavor those of any location on the continent. Sweet potatoes especially do well, on account of the possibility of allowing them to remain in the ground until winter, when crops elsewhere are scarce.

Small fruits, such as seedless sultanas, grapes, dewberries, blackberries, etc., ripen much earlier here than even in the favored climate of the coast regions of Southern California and find a ready market at good prices.

Experiments are being made with the date, as at Mecca, and there is little doubt but that the results will prove successful. Sugar-beets, rice, and early vegetables also do well. Indeed the scope for the farmer and horticulturalist is large, and as the conditions improve with the continued planting of trees it will not be many years, in my judgment, before the population of this and similar desert regions will be as dense as it now is in many of the older eastern regions.

With alfalfa, barley, wheat, and other forage it can well be seen that the Imperial country is excellent for stock and cattle

Cattle in the Imperial Valley

raising. Hogs do as well as cattle, and there is in Los Angeles a market for ten times as much live stock as is now being raised.

In this short period of time the Southern Pacific has built upwards of sixty miles of railway into the valley, and the Holtville Interurban runs an electric line from Holtville to Imperial, a distance of twelve miles.

The freight reports of the Southern Pacific for 1905, the third year after work *began* in the valley, as shown on the following page, is the best indication of its growth.

The towns of Imperial, Brawley, Holtville, Heber, Calexico, Mexicali, Silsbee, and El Centro have been established, with hotels, banks, newspapers, good stores, schoolhouses, telephones, ice plants, piped-water systems, and electric lights.

Since the flooding of the Salton Basin, as elsewhere related, there has been a decided arresting of the course of development.

This was natural. In the chapter on the Salton Sea I record the efforts that have been made and are now, (October, 1906,) being made to arrest the flow. When that is accomplished the growth of the valley will flow on uninjured and a great empire will be built up on what was once the Colorado Desert.

STATEMENT OF TONNAGE MOVING OFF THE IMPERIAL BRANCH OF THE SOUTHERN PACIFIC RAILWAY TO IMPERIAL JUNCTION AND IMPERIAL DURING YEAR 1905.

DESCRIPTION OF COMMODITIES.	FROM							TOTAL TONS SHIPPED OF EACH COMMODITY.
	BERNICE.	BRAWLEY.	KEYSTONE	IMPERIAL.	EL CENTRO.	HEBER	CALEXICO.	
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Wheat	. .	178	. .	191	. .	. .	. .	369
Corn	. .	492	. .	32	. .	. .	. .	524
Oats	. .	. .	. .	9	. .	. .	. .	9
Barley	95	1918	53	3228	143	1843	503	7783
Other Grain	. .	24	. .	. .	. .	. .	. .	24
Feed	. .	. .	. .	122	. .	. .	35	157
Hay	. .	263	10	774	9	125	. .	1181
Green Fruit	. .	. .	. .	. .	. .	. .	20	20
Vegetables	. .	36	. .	. .	. .	. .	. .	36
Melons	. .	132	. .	. .	. .	. .	. .	132
Horses	. .	. .	. .	100	. .	. .	20	120
Cattle	24	. .	. .	1730	. .	. .	603	2357
Sheep	. .	. .	. .	24	. .	. .	. .	24
Hogs	24	116	. .	835	. .	24	161	1160
Machinery	. .	18	. .	20	. .	. .	. .	38
Ag'l Implements	. .	30	. .	. .	. .	. .	. .	30
Emigrant Mov's	. .	10	. .	100	. .	. .	. .	110
Ice	. .	15	. .	. .	. .	. .	. .	15
Outfits	. .	24	. .	. .	. .	. .	24	48
Total Tons Shipments from each place	143	3256	63	7165	152	1992	1366	

Of no lesser importance, though smaller in extent, are the irrigation enterprises of the Coachella Valley at the northwestern

Photo. by Putnam & Valentine, Los Angeles, Cal.

WATERMELONS GROWING AT COACHELLA ON THE COLORADO DESERT

end of the Colorado Desert. Here, however, the water is supplied by artesian wells, the existence of which is explained in the chapter on "Water on the Desert." The towns of Indio, Coachella, Thermal, and Mecca are the business centers of these rich and fertile desert-lands. There are in all about two hundred thirty-four square miles in this valley which are irrigable from the present supply of artesian and surface wells. The valley extends from a little above Indio to the badly alkaline lands of the Salton Sink, which forms the southeastern boundary, the mountains on the northeast and southwest naturally limiting the soil areas in their direction.

Of the climate in both the Imperial and Coachella Valleys I have not written specifically, but it can well be inferred from the general presentation of the subject found throughout these pages.

On the main canal, Imperial, wagon road

Semi-tropic and arid, it is characterized by cloudless skies, low relative humidity, high temperature in summer, and slight frosts in winter. The summers are long and very hot, but owing to the dryness of the atmosphere the high temperature is not nearly so oppressive as temperatures of twenty or twenty-five degrees lower in the humid part of the country.

Most of the land of the valley is level, with a general slope from six to twenty feet to the mile, so that it is well suited to irrigation, though in the western part, in the vicinity of Indio, there are many sand-dunes, to level which would exceed the value of the land. Along the base of the mountains the soil is sandy and gravelly, and it is cut, here and there, by small arroyos which extend from the canyons of the mountains and carry water during flood time. At the mouth of each of these arroyos is a

cone delta, and these give to the surface an irregularity which will add difficulties to the engineering features of its irrigation. The flood waters, too, require to be provided for, so that crops growing during the period when floods may occur be not destroyed.

The surface soil of the whole valley is practically composed of wash from the mountains, though undoubtedly there is some of the sedimentary deposit of the old lake. It is divided into five separate types, viz., Fresno sand and dune sand, Fresno fine sandy loam, Fresno sandy loam and Imperial clay. The two first named are alike in character, but the first lies in comparatively flat areas, while the dune sand, as its name implies, is largely in low, broad, crescent-shaped dunes from two to twelve feet in height. The fine, uniform particles of finely pulverized mineral matter that go to make up the Fresno fine sandy loam render it the most valued and valuable land of the valley.

At present the whole of the irrigation of the Coachella Valley is from wells, mainly artesian, some of which flow and others need to be pumped.

The amount of water a well will flow varies greatly with its location. Near Mecca and as far up as Coachella the flow from a three-inch well is generally enough to irrigate forty acres of land. Some wells flow much more water than others, and some crops require more water than others.

There is a sensible diminution of the flow from artesian wells in the valley, as more wells have been bored. This is especially noticeable in the vicinity of Indio. Where three years ago wells flowed several inches over the casing they now have to be pumped. The supply will surely be further diminished as more wells are put in on the lower levels, and for much of the country now irrigated from flowing wells pumping will be necessary. This has been the history of all artesian districts; the wells at higher levels always cease to flow and have to be pumped as their supply is lessened by wells being bored at lower levels.

It has recently been noted near Coachella that not one of the wells sunk to a depth of 600 feet will flow when all the pumps are running, but those down 1,000 feet will flow all the time. The price of a good pumping plant ranges from $1,000 to $2,000, which includes the sinking of the well, pipe, etc.

Bare land is held at prices ranging from sixty dollars to one hundred and twenty dollars an acre, one hundred dollars per acre being a fair average.

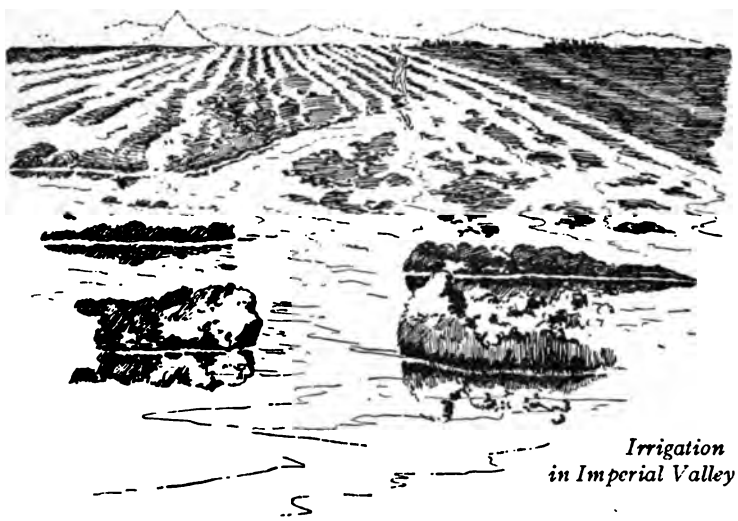
The chief crop of the Coachella Valley is cantaloupes. From an experienced horticulturalist, speaking through the *Rural Californian* early in July, 1906, we learn that "between 700 and 800 acres will be planted to cantaloupes next season, and about two hundred fifty acres to melons. The approximate yield is two hundred crates of cantaloupes to the acre, and the average price to the grower last year was one dollar twenty-nine cents a crate. Melons will yield about eight tons to the acre, returning to the grower an average of twenty dollars a ton throughout the season. Two and a half acres of cucumbers netted $1,100; tomatoes during the month of June sold for ten cents a pound; and string beans, of which there are large quantities raised, brought from six to seven cents a pound."

Besides the products above referred to large quantities of Thompson's seedless grapes find a ready market at good prices. The Malaga grape, too, produces abundantly in Coachella, and the prospects are that ten car-loads or over of both kinds will be shipped next season. About 500 acres will be planted to grapes this year, but even if 5,000 acres were planted there would be no danger of over-production. Grapes ripen in that section fully six weeks earlier than they do in other portions of California, hence competition is reduced to a minimum.

It has been found, however, that where land is used continuously for melons and cantaloupes the value of the crops decreases each year. Careful and scientific farmers, therefore, not only diversify their crops but have learned, or are learning, the practical utility of planting the leguminous crops which have the power of producing nitrogen from the atmosphere. These crops are sometimes "turned under," without harvesting, in order that all the nutriment may go to enrich the soil. The result is a large increase in the value of the land.

As growth is practically continuous owing to the perpetual summer climate and the use of irrigation, a little care and forethought will produce crops throughout the year, and due rotation of crops will preserve the richness of the soil.

This year (1906), however, the cantaloupe crop of the Coachella Valley suffered largely from the aphis, a small insect that injures the growing vine. But methods are being tested which prove that the aphis can be killed so that it is pretty well assured the evil of the pest can be overcome. This presence of the aphis is the first appearance, I believe, of an insect pest upon the fruit or vegetables of the desert. As a general rule it may be stated that the desert is free from these pests. The black scale on the orange, the red scale on the lemon, the red spider on the grape, are unknown, and to one like myself, used to seeing these pests and having to



Irrigation in Imperial Valley

wage constant war with them in the coast regions of Southern California, the freedom from them on the desert has always been a source of delight.

The cantaloupe crop of the Coachella Valley is mainly handled by a "Producers' Association." This association supplies the seed, and gives to its members expert instruction as to the methods of farming which produce the best results. When the crop ripens the members deliver their produce to one or other of the four shipping points of the association, where it is duly packed, and shipped in refrigeration cars, iced from the association's own

plant. The produce is thus pooled and the grower receives his return from the net profit of the pool. Crops are shipped to Chicago, New York, Boston, Philadelphia, Pittsburg, Omaha, Kansas City, Denver, San Francisco, Portland, Ore., Butte, Seattle, Spokane, and Salt Lake City.

The table on page 371 cannot fail to be both interesting and instructive.

From this table it will be seen that the net proceeds to the grower for his cantaloupes ranged from eighty-eight cents, when the largest shipments were made, to $3.75, which was the first and smallest, when, of course, prices obtained were high.

I think, therefore, it is apparent that the fertility of the soil, the almost absolute control of crops by irrigation, the close proximity to a great system of railway that insures speedy and economical distribution of crops and reception of supplies, and above all, the fact that crops ripen weeks earlier than elsewhere throughout the country, and that the rapid growth of the cities of Southern California provides a market for all that can be grown, at good prices, are clear indications that the fertile valleys of the Colorado Desert have an assured future of great prosperity before them. And when to these is added the anticipation of larger markets that will necessarily open when the Panama Canal is completed, by the greater influx of shipping, and the constant and marvelously rapid development of all that goes to increase population in Southern California, it can well be seen that the prospects of the desert farmer are bound to be enhanced in value. To me the development of these fertile areas, from once apparently valueless lands, is one of the most interesting phases of desert life, and I shall continue to watch it with keen interest.

Before concluding this chapter a few words must be said upon the subject of irrigation. This is not a mere matter of letting water run haphazard on the ground. In these desert regions, where water is scarce and evaporation rapid, great care and wisdom must be exercised in irrigation. If water is allowed to run hurriedly over an area, and then cultivation is either entirely neglected or insufficiently performed, more harm than good is liable to result to the trees it was intended to benefit. For, by the hurrying of the water, deep absorption is prevented and only the

surface roots are nourished, and, by the careless cultivation, immediate evaporation not only of the surface takes place, but by capillary attraction the little water that has gone below the soil is drawn back to the surface and evaporates. An additional evil also occurs, in that shallow wetting of the soil leads to the development of tree and plant roots near the surface where they come into more immediate contact with the destructive alkali salts.

One of the difficulties that farmers familiar with Eastern methods meet with when irrigating these desert soils is the "coming up" or "rising" of alkali. Alkali, as is generally known, is the term applied to potash, soda, or lithia when found in soils in large and clearly discernible quantities. Here is the average composition of alkalies from the Colorado Desert:

Calcium sulphate ($Ca\ SO_4$)	9.91%
Magnesium sulphate ($Mg\ SO_4$)	9.02%
Sodium sulphate ($Na_2\ SO_4$)	.33%
Potassium chloride (KCl)	30.02%
Sodium bicarbonate ($Na\ HC\ O_3$)	9.59%
Sodium nitrate ($Na\ No_3$)	8.91%
Sodium chloride (Na Cl)	32.22%

All the soils of the lower levels of the desert contain alkali, some more, some less. While some plants and trees can resist a large quantity of alkali in the soils, others are most sensitive.

Experience has demonstrated that the best way to treat heavily alkaline soils is to flood the affected area so that the salts are backed down into the lower soil, and then deeply and thoroughly cultivate the ground to prevent surface evaporation and the consequent return of the alkali.

Subsoil irrigation is sometimes practised where the supply of water is small. This method possesses the merit of compelling the water to penetrate quickly and deeply into the soil, leading to a deeper establishment of root-systems and allowing less surface evaporation. But even in such cases surface flooding should be resorted to as soon as a sufficiency of water is had for the purpose.

Table Showing Distribution to Growers in Weekly Pools

CANTALOUPES — **EASTERN POOL**

Pool.	Total No. Crates.	Net Proceeds.	Average.	STANDARD CRATES. No.	STANDARD CRATES. Net Proceeds.	STANDARD CRATES. Average.	PONY CRATES. No.	PONY CRATES. Net Proceeds.	PONY CRATES. Average.
Special Pool	41	$110.85	$2.70				3	$ 11.25	$3.75
Pool No. 1	630	983.18	1.56	81	$ 209.19	$2.58	140	234.61	1.67
" " 2	3,792	5,451.43	1.44	599	1,799.09	3.00	857	1,705.96	1.99
" " 3	13,649	17,144.93	1.26	5,427	8,489.09	1.56	4,232	5,178.93	1.22
" " 4	27,037	23,901.96	.88	9,986	11,175.34	1.12	9,109	8,032.09	.88
" " 5	20,019	31,519.23	1.57	7,638	17,530.32	2.30	5,533	8,365.58	1.51
" " 6	8,153	16,254.14	1.99	2,490	7,408.52	2.98	3,124	5,600.12	1.79
" " 7	2,068	3,665.12	1.77	676	1,764.15	2.61	795	1,212.27	1.52
" " 8	1,424	2,488.55	1.75	555	1,331.59	2.40	636	858.39	1.35
" " 9	178	310.20	1.74	64	150.62	2.35	83	108.62	1.31
	76,991	$101,829.59	$1.32	27,516	$49,857.91	$1.81	24,512	$31,307.82	$1.28

Hidden Lake, on the edge of a mountain ridge on the trail to San Jacinto Peak

CHAPTER XXV

Horticultural Possibilities of the Desert

As early as 1857, Dr. Veatch called attention to the fertile character of the desert soil. He contended that only those parts of the desert were condemned to irretrievable barrenness that were covered with drifting sands. The other portions only needed moisture to produce a wilderness of vegetation. He suggested the use of New River, "but a far more convenient supply could be furnished by artesian wells, or, better still, by windmills raising water from common wells."

Dr. Newbury, of the Colorado River Exploring Expedition, also said: "If water could be supplied regularly to the New River country it would be a perfect garden."

A large portion of the soil of the desert is the siltage of the sediment brought down ages ago by the Colorado River. It is hundreds of feet deep in places, and as rich and fertile a soil as can be found in the world. Like the sedimentary soil of the Nile overflowed region it is of the highest possible nutritive value, and in such proportions that the accretions of years only make it the richer. Occasionally there is a layer of harder clay, but generally speaking the soil is of this rich, soft, sedimentary nature.

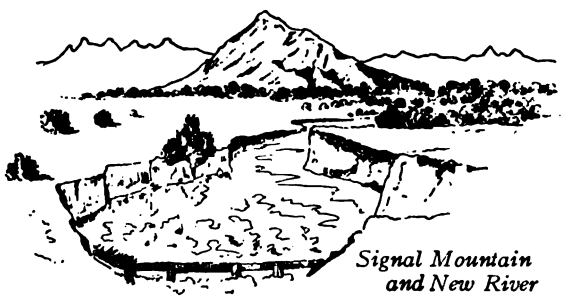
One finds out how soft the soil is if he accidentally treads upon it after irrigating. Down he goes in a moment into a mushy quicksand that covers him over the shoe tops in a moment, and if the seepage has been deep and he stands there the surprised stranger will sink to his knees in a very few moments.

With such soil and careful irrigation the possibilities of the desert seem almost endless.

I think it may safely be accepted as a constant rule, that in proportion to the variety of trees and plants naturally produced

on the desert, within equal areas, will be the variety of agricultural products and their relative success. Yet great care must be exercised by those not familiar with desert conditions or they will assuredly plant trees that are doomed to failure. Many a sad story might be written of men, too confident in their own knowledge, or too ignorant to know what they were doing, who lost their all in planting things unsuited to meet desert conditions.

Oranges grow wonderfully at Palm Springs, and also on the mesa heights above Yuma. At the former place the fruit is very juicy and heavy and contains more saccharine matter than is found in any of the oranges grown elsewhere in the state, and, ripening so much earlier, it commands a high price. It is a great delight, too, to see the trees and fruit free from scale and all parasites. The leaves are green and clean, with a richness that delights the eye and tempts one to touch and caress them; and the fruit in its golden yellow, free from all black discolorations, gives the lighter note of color that completes the beauty of the picture. I suppose that only those who have seen the oranges growing in the moister air near the coast, where the black scale discolors leaves and fruit as if soot had fallen upon them, and where the dust of the roads settles upon them and deprives them of their fresh and beautiful appearance, can fully appreciate the charm and delight of these clean, fresh, healthful trees at Palm Springs.



Signal Mountain and New River

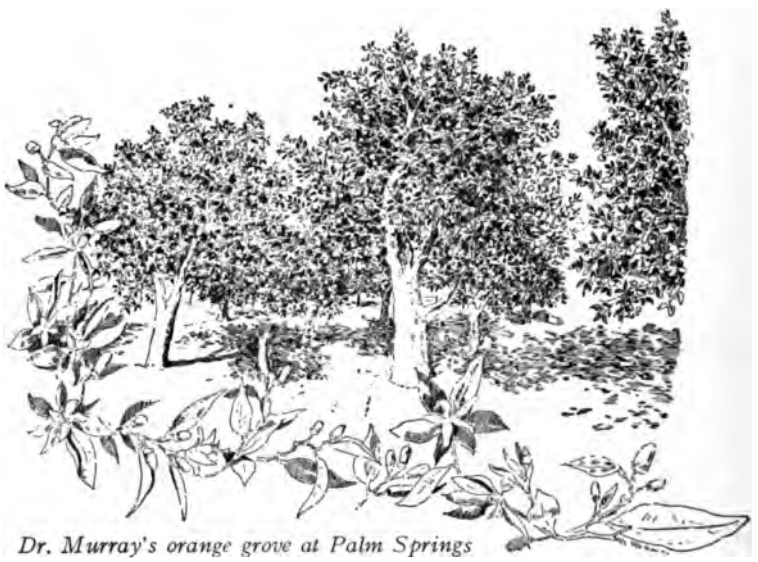
Figs grow luxuriantly, the mission variety so far being found to be the only commercial success. I have told of Fig Tree John's wealth in his fig trees, and at Palm Springs, Marcos, the Indian, received $30 for the product of three trees last year. The mission fig is the same variety as that known as the Brown Turkey. It is rich, sweet, and juicy, and singularly free from seeds.

Photo. by Putnam & Valentine, Los Angeles, Cal

GRAPE-VINES GROWING AT COACHELLA, ON THE COLORADO DESERT

The pomegranate (*Punica granatum*) grows luxuriantly on the desert, and can be increased illimitably by cuttings, layers, and suckers. It ripens in the beginning of July and is rapidly becoming a profitable market fruit.

Cantaloupes, as I have already shown, are the chief present crop of the Coachella Valley. This fruit is so called from a country-seat of the Pope, near Rome, where it has long been cultivated. It was originally a desert plant, for it was taken to Rome from the Armenian desert. In 1904 cantaloupes ripened



Dr. Murray's orange grove at Palm Springs

at Coachella May 20, and shipments were made at that time. The first three crates sold for $50, and six crates the following day brought $72 in Chicago. Of course these are the fancy prices for early fruit.

Three years ago Goth Brothers, of Coachella, planted a small patch of sweet potatoes, and so large were their profits that the next year they materially increased their acreage. Last year they had a great demand for sweet potato plants locally, and this year they have commanded orders from all parts of the state. Up to date they have filled orders for 206,000 plants, and have

orders in for 80,000 more, which are being filled at the present time.

They began shipping these plants on March 26. The plants could have been shipped at any time during the winter, as they throve all through that season, but the fact is that no other section had warmed up sufficiently, until March 26, to justify the setting out of the plants. They sell the plants at two dollars per thousand. This is "easy money" surely, since the plants sprout from the potatoes left in the ground after the field has been plowed up and the crop marketed.

Head of milo maize

On the twenty-eighth of June they began the shipment of potatoes. Their crop was sent to Colorado Springs, every potato carefully wrapped in tissue paper and sold for thirty cents a pound. The clubs and epicures of many cities took the crop as fast as it could be supplied for eighteen days at thirty cents, when prices dropped. When they were quoted at one and one-half cents on September 25, the Goth Brothers again stopped shipping and again held them, as they lay in the ground all winter.

Milo maize

All other supplies of sweet potatoes having again become exhausted, they resumed shipping on February 27, 1904, when the price had advanced to two and three-fourths cents per pound, and have been shipping ever since, the price gradually rising, and now being sold at four cents, with higher prices in sight, as is usual in the spring and early summer. A peculiarity that favors the sweet potato grower in the Coachella Valley is that the soil has a preservative quality that is distinctive. It is only necessary to keep the irri-

gation water off the sweet potato field in order to hold them in the ground, just as they lay, without blemish, all winter.

The Bermuda onion is also found to grow remarkably well. It yields heavily and sells readily at a good price. Another advantage it possesses is that it will keep.

A car of tomatoes, cabbage, or other similar vegetable, shipped North, must, on account of its perishable nature, be sold as soon as it reaches the city and placed in the consumers' hands. And for this reason the glutting of the markets and the consequent low prices are inevitable. In the case of a car of Bermuda onions there is no such necessity, for the onions can be delivered to the most distant parts of the United States or Canada, or sold for export, and be kept in stock by the dealers as a staple article, which will absolutely prevent the demoralization of prices and consequent loss to the producer.

Sugar cane growing in Imperial Valley

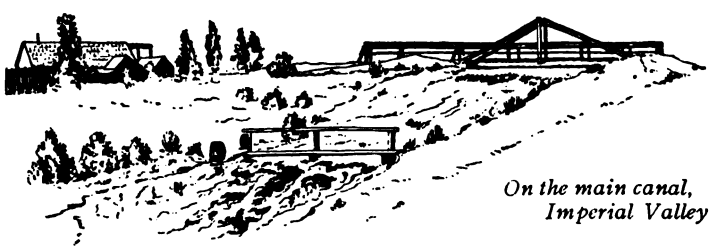
There is a great possibility that rice will become one of the paying crops of the Imperial Valley and Colorado River region. It needs a warm country and also plenty of water, for it must be flooded for seventy days,—from the time the plants are from six to ten inches high until the grain is in the milk. Both conditions can be met on the desert, and there is no reason that this should not become a regular crop.

Alfalfa is by many regarded as the "queen of desert forage plants." It will grow in a greater variety of soils, is hardier, will resist more alkali, is richer in nutritive qualities than clover, yields heavier tonnage, is less trouble to grow, enriches the soil for future and different crops by gathering nitrogen from the atmosphere, and gathers useful mineral elements from the deeper layers of soil. It is thus a great renovator of the soil.

What may be accomplished in a short time under good conditions on the desert is being demonstrated by Mr. Fred N.

Johnson, whose place is about a mile and a half west of Indio. Mr. Johnson is a young man, driven by ill health from Illinois to Colorado, where, for several years, he was engaged in the growing of small fruits. He then moved to Southern California and finally upon the desert, taking up, under the homestead act, one hundred sixty acres of land. A little over three years ago he began the active cultivation of his place, or rather a small portion of it, having a firm belief that it is far better to work a few acres well than a large number indifferently. He has about six and a half acres already planted, and to one unfamiliar with the rapid growth of plant life in this natural forcing-house the results he has attained seem little less than marvelous.

With a clear perception of what he desired to attain he planted accordingly. He decided that, as fruits grown on the desert



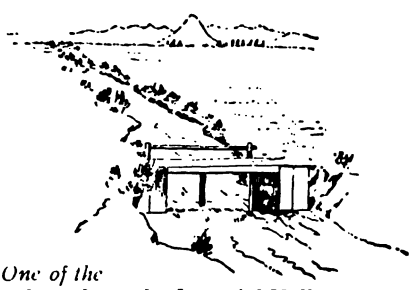
On the main canal, Imperial Valley

mature so much earlier than those grown elsewhere, he would endeavor to secure a succession of crops for the home markets of Riverside, Redlands, Los Angeles, and San Francisco. It is well understood that fruits and vegetables which appear in the markets a few weeks ahead of the regular seasons command high prices, especially if these early products are of fine appearance and equally fine quality. Here then were objects to be attained. The soil of his ranch is, in the main, a sedimentary deposit almost as light as ashes, which works easily, does not "bake" after irrigation and yet retains the moisture. For irrigation he drove three wells, each in the neighborhood of one hundred and six feet deep, equipping them with self-acting windmill pumps.

For an early crop he planted twelve short rows of asparagus, —

less than an acre. On the second year it came into bearing and this year and last he began to ship as early as February 15. He found, however, that his shipments were no earlier than the asparagus grown on the San Joaquin River reclaimed lands in the central part of the state. Still there was a good market for all he could send. For about two months he continued to ship, and at the end of the season he found his net returns from the twelve rows were sixty-five dollars. The vegetable sold in the market for about ten cents a pound, from which deductions must be made for crating, commission, and expressage, leaving the net price gained about seven and a half cents per pound.

As soon as the crop of dewberries, raspberries, and strawberries began to ripen, the asparagus was neglected and all possible attention given to the newer crop. From eight short rows (seventy-five to one hundred feet long) one hundred seventeen crates of dewberries were shipped and sold (besides seventy quarts put up for home consumption). These sold for from one dollar fifteen cents to one dollar fifty cents a crate and netted the grower about seven cents a basket, or one dollar a crate, making a total of one hundred seventeen dollars for the season. In addition new plants were grown from the beds and twenty-seven dollars' worth sold, making the total proceeds from dewberries one hundred forty-four dollars. There is an unlimited demand for this kind of fruit and the desert is by far the best place to grow it.



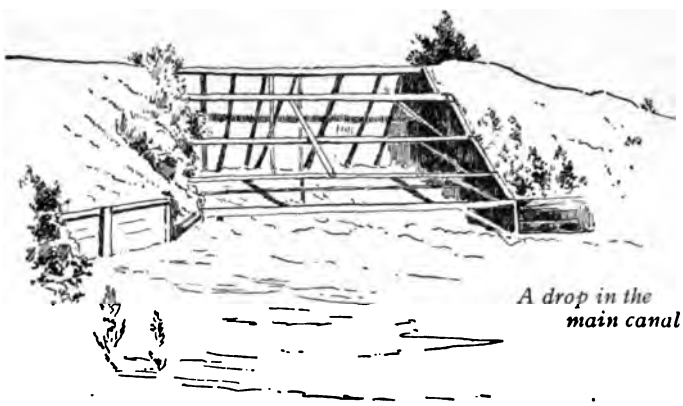
One of the lateral canals, Imperial Valley

Then figs and grapes come into bearing about the same time, viz., June 15. The early figs bring one dollar and fifty cents for an eight-pound crate, which contains six and one-half pounds of figs. From eight trees, only three of which bore well, Mr. Johnson received forty-two dollars last year, and it must be remembered his trees were but two years old. When I saw

them this year (June, 1906) they were trees as large as mine which have been planted over ten years. The fig crop lasts practically until December.

From eighteen apricot trees he picked sixty-two crates and received therefrom fifty-eight dollars net.

He has planted a variety of grapes and is giving them a thorough test. The Thompson seedless is fast coming into favor as a table grape. Though small it is of good flavor, and being seedless is pleasanter to eat. It is a great bearer, though it does not bring as large a price as other more showy grapes. The Luglienga is



A drop in the main canal

an amber-colored grape that ripens earlier than the Thompson seedless. It bears well and is a larger grape. The Chassalas Rose is a finely flavored grape that ripens early. It is not a rank grower, however. The grapes are medium sized and the bunches rather small. On these accounts it is a favorite with the better class of purchasers, and its handsome appearance is an added factor in its favor.

Thousands of grapes of different varieties have been planted in the Coachella Valley this year, but Mr. Johnson's method is one of careful experimentation ere he plants large quantities.

Besides the fruit, Mr. Johnson plants Bermuda onions, from a small patch of which he took over two hundred sacks. Lettuce

he has all through the winter and Lima beans early in the fall. The first shipments of these bring in fifteen cents a pound. In addition he has summer squash, egg plants, chili, cauliflower, cabbage, tomatoes, and sweet potatoes, and all do well.

In August the almonds begin to ripen, and as these grow to be very large he obtains twenty cents a pound for them.

One part of his one hundred and sixty acres is of sand-dunes similar to those in the Sahara. He has determined to experiment in date-planting in the dunes exactly as they do in the original home of the date, and for that purpose the government has sent him nineteen varieties of Algerian and Tunisian dates, two Egyptian, and two Persian. The results of his experiments are awaited with interest, because it is assured that all that can be done he will do.

Altogether the possibilities for horticulture in the desert are large, and he is wise who, entering upon this new field, keeps in touch with the experimenters and then follows the results that are successful.

California Development Company's barn and water tower at Calexico, California

Photo. by Putnam & Valentine, Los Angeles, Cal.

ORCHARD ON THE COLORADO DESERT

CHAPTER XXVI

Date-Palm Culture on the Desert

HO is there that does not enjoy the delicious and luscious date? Its rich and meaty sweetness is grateful to young and old alike. The United States imports large quantities each year from Asia, the Year-book of Agriculture stating that in 1901 our imports amounted to 18,434,917 pounds, valued at $372,400. But it must be remembered that this valuation was the price at the port of export, viz., 2.02 cents per pound. The purchaser usually pays not less than ten to even fifteen and twenty cents, the higher prices being for the best varieties.

The major portion of these imported dates come from Bassorah and Maskat, the former on the Shat-el-Arab River, at the head of the Persian Gulf, and the latter in Arabia. Yet all travelers and connoisseurs in dates well know that the supply sent to the United States is of the poorer qualities, and that very few of the richer and more delicious varieties ever reach our tables. This is not as it should be, and it is not in accordance with our national dignity. Yet a few years ago American orders for over a quarter of a million pounds of the finer varieties were refused by Algerian growers because the European demand far exceeds the supply. We need dates for our tables as food, and for confectionery as luxuries. We are willing to pay a good price for them, and if we cannot secure them in one way we will in another.

It was not deemed possible to grow dates in the United States until a few years ago, when the matter began to be more than mere casual haphazard guesswork. An office was organized in the Department of Agriculture to make detailed studies as to the climatic, soil and cultural requirements of new crop-plants,

and to determine where they could be grown most successfully. The date was one of the first to receive careful and thorough attention. A comparison of temperatures was found to reveal that in the Salton Basin on the Colorado Desert of Southern California there is a climate which in some respects out-Saharaed Sahara. Parts of Arizona were also found to be very similar in climate to the home of the date.

Accordingly an expedition was fitted out to go to Persia, Algeria, Arabia, Egypt, Tunis, and other date-growing countries, not only for the purpose of studying the various methods of date growing, but also to secure for experimental planting in the United States a variety of the best and richest kinds.

Palms in the foot-hills near Indio

The investigations were most carefully and thoroughly carried on by experts and a large amount of both scientific and practical knowledge obtained. It was found that the date best suited for testing purposes, as well as for practical growing after the experimental stage had passed, was the famous Deglet Noor from the Algerian Sahara. Its fruit is of fairly large size, dark amber colored, translucent and with a small, pointed pit. The flesh is firm, sweet, and of exquisite flavor and aroma. When properly handled in gathering and packing it remains clean, has a fine smooth skin, is unbroken and dry, and can be served as a dessert fruit with most appetizing results, entirely different from the sticky, dirty-looking, mashed-up masses that come from the Persian Gulf region.

There are, however, three kinds of dates of which we ought to have a sufficiency grown in the limits of our own country. There are, in addition to the Deglet Noor and kindred varieties, which are the only kinds popularly known in America, and called by the trade "soft dates," two other types, viz., the "fresh"

and the "dry" dates. Fresh dates contain far less sugar than soft dates and consequently readily ferment and turn sour. But if eaten when fresh, as one eats grapes, they make a most delicious table fruit. Dry dates are harder and more solid than soft dates, drying and hardening on the palms and dropping off as they harden. When gathered they may be kept for years if placed where they are dry and safe from weevils. Dry dates do not taste at all like ordinary dates, as they are not nearly as sweet and have besides a nutty flavor.

All these kinds can be grown in the United States. This has been satisfactorily demonstrated, I believe. Soft dates have been successfully cultivated and gathered both at Tempe, Arizona, and at Salton. Only the other day I had the pleasure of seeing bunches of dates which in the fall of the year will no doubt weigh two hundred or more pounds and be as ripe and delicious as any that are ordinarily imported. As far back as 1895 dry dates were grown in the Coachella Valley. The fruits were about one and a quarter to one and a half inches long and five-eighths of an inch wide, of brownish amber color, much wrinkled and with a dull meal-bloom on the surface. The flesh was hard, but free from fiber and of fine flavor.

Had our scientists been alert years ago they might have discovered a century since that dates could be grown in the Colorado Desert. In Palm Canyon, Murray, Andreas, and Lukens Canyons at the northwestern edge of the desert, various spots on the southwestern edge, and in many places northeast of Indio the fan-palm (*Neowashingtonia filifera*) abounds.

When in the early spring one rides over the desert and comes suddenly upon one of these groves, especially if he be piloted skilfully so that the sand-dunes hide the waving palms until a sudden turn brings them to view in all their weird, wild beauty, they seem to leap upon him with a strange and uncanny feeling. The blue of the sky, the green of the palms, the golden sands, all combine to impress one with a crude intensity, a blazing splendor that is as startling as it is amazing and overwhelming.

These palms are the chief feature of attraction in Palm Canyon, and many visitors each year drive up to enjoy them in their original habitat.

Whence came these palms?

Much has been guessed about them, as that the Spanish padres brought the seeds from Mexico and planted them here. The absurdity of this is apparent when one sees the fruit of these desert palms. They cannot be called dates, these small berries no larger than coffee beans. Though the Indians pound them up into a meal and eat them, the meager flesh would never have justified the padres in going to the trouble of planting them. These priests were too well versed in horticulture to bring seeds that were useless, and after all it is largely conjecture and Indian tradition that they ever saw the recesses of Palm Canyon, though they are known to have camped at Palm Springs.

All that remains of Seven Palms

Be this as it may, modern scientific research has now determined that this is a separate and distinct species. All the fan-palms, with the peculiar threads which the edges of the fronds of these palms carry, found throughout California and the rest of the United States, have come from this desert area, for they are found only in this one locality throughout the world.

The Indians used to have most interesting ceremonies in connection with these palms. They tell me that it was their ancient custom each year to set fire to the dead leaves. This rendered the fruit of the palm larger and sweeter. It must be confessed that it would have to be fired many times a year to make the fruit large and sweet enough for white men to care to gather and eat. The present fruit is very small and with a seed that occupies nearly all its bulk, leaving only a very narrow covering of

"meat." It is sweet and nutritious, however, and the Indians find it a pleasant and helpful addition to their limited natural dietary.

The Arabs have a proverb that the palm to do well should have its feet in water and its head in the fire. In the Colorado Desert these conditions can be pretty nearly fulfilled. The temperature is very high in summer, reaching to 120° Fahrenheit quite often, and it is not unseldom found as high as 130° Fahrenheit. In a comparison with Sahara temperatures, the Salton Basin is found more favorable for maturing the fruit than the former. Hence the positive statement of the government expert, Mr. Walter T. Swingle: "There can be no doubt that the Deglet Noor date

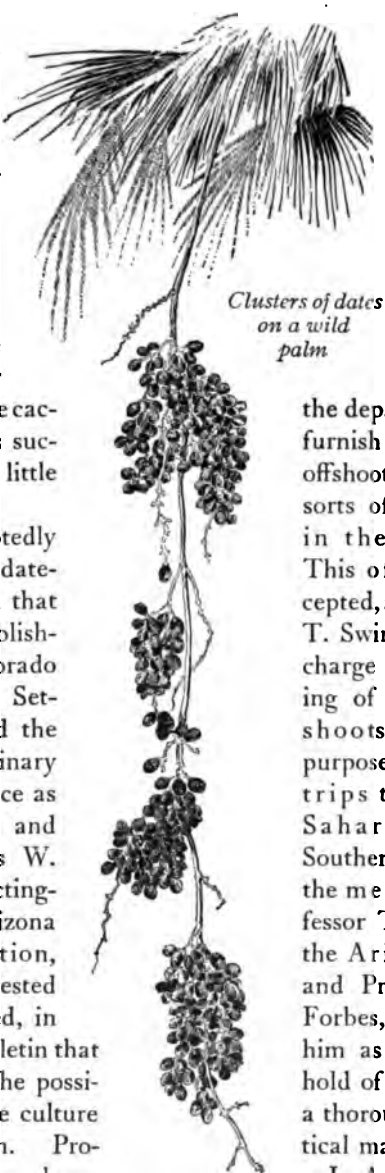
Twenty-nine Palms

will ripen fully in the Salton Basin, even when the season is exceptionally cool. The importance of this demonstration can scarcely be overestimated, since it renders it possible to establish in America the culture of this choice date, the most expensive of dried fruits, with certainty of success."

I have recently paid several visits to the Mecca experimental farm. This farm is not far from the northwest end of the still-rising Salton Sea. The farmer in charge, Mr. Bernard G. Johnson, is of the impression that should the sea continue it might affect the favorable conditions for date growing.

But of this I think there need be little fear. The date-palm is a typical desert growth, and in its native habitat is found ranging from 23° to 35° north latitude. It is possible that the earlier and hardier varieties would grow as far north in California as Mount Shasta. In Arabia and the African Sahara they are

the chief growth of the oases, for they need hot and dry atmosphere, but a sufficiency of moisture at their roots. From this it will be seen that, while a desert growth, the palm is entirely different from the cactus, which grows successfully with but little water.



Clusters of dates on a wild palm

It was undoubtedly the success of the date-palm in Arizona that led to the establishment of the Colorado Desert Station. Settlers first planted the seeds of the ordinary dates of commerce as an experiment, and Professor James W. Toumey, while acting-director of the Arizona Experiment Station, became so interested that he published, in June, 1898, a bulletin that clearly showed the possibilites of the date culture in that region. Professor Toumey took up negotiations with the Department of Agriculture, offering to secure a site for a special date garden — set out, irrigate, cultivate, and generally care for the plants — if the department would furnish a collection of offshoots of the best sorts of dates grown in the Old World. This offer was accepted, and Mr. Walter T. Swingle was given charge of the securing of the date offshoots, for which purpose he made two trips to oases in the Sahara Desert in Southern Algiers. In the meantime, Professor Toumey left the Arizona Station and Professor R. H. Forbes, who succeeded him as director, took hold of the subject in a thorough and practical manner.

In August, 1899, the first small trial impor-

tation of plants took place, but owing largely to faulty methods of packing then in use, all died. In July of the following year 405 trees were received, of twenty-four varieties. Of these 123 trees died, leaving none of three of the twenty-four varieties. From these nearly 678 suckers have been taken, all of which have been planted and are doing fairly well. Up to 1904 a net crop of about three hundred pounds of fruit had been harvested, and in 1906 some four thousand pounds of dates were produced in the garden.

Gophers are found to be great enemies to the palm, as they are to most tree-growths in irrigated regions. They burrow to the succulent roots which they eat, often following them into the heart of the tree, which they eat out with fatal results. Where the palms are on heavy soil this is not so liable to occur as where they are planted in light sandy soil.

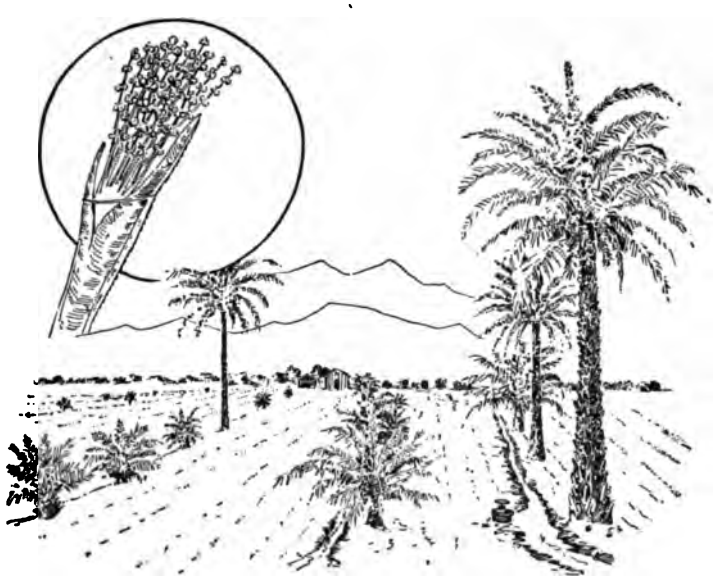
But in spite of gophers and other disadvantages, date culture has so far progressed in Tempe that it may safely be said it is no longer an experiment. The ability to make the large shipment of offshoots, above referred to, was owing to the Yankee ingenuity of Mr. Swingle, who made a bold and (to the Arab and French and English merchants) startling innovation in the method of packing and shipping the offshoots. It had been the custom to send them rooted in tubs. This meant great expense in the care of the young plants for a year or two in the nursery, and then tremendous freight charges on account of the bulk, weight, and perishable nature of the plants.

Mr. Swingle wrapped damp moss, or the fibrous material found on the mature palms, about the bases, and tied it firmly in position with stout cords, and then shipped the plants on camels ninety miles over the desert to Bishra. Here they were unpacked, reëxamined, labeled, repacked, and sent in a special car by rail to Algiers, three hundred and ninety miles away, where they were once more examined, watered, trimmed, and packed in ordinary wooden boxes for shipment by steamer.

As a result of the adoption of this new method of packing, the expense of transporting offshoots from the Old World deserts to Arizona and California was cut down to less than one-tenth of what it had been and yet a larger percentage were made to grow. The heavy losses in the first importations were all among

date offshoots grown in tubs a year before they were shipped, whereas this very first shipment of offshoots packed by the new method gave over eighty per cent of successes, though the Arabs do well to get seventy-five per cent of the offshoots to live when they are merely moved from one field to another.

This first large shipment left Algiers, June 13, 1900, and reached New York, July 3, where another careful examination took place. The Morgan Steamship Line and the Southern



The experimental date farm at Mecca

Pacific Company kindly offered to transport the twenty-three cases, weighing eight tons, free of freight charges to their destination, and on July 17 the palms reached the Tempe siding where Professor Forbes was waiting to receive them. They were immediately unpacked, disinfected, planted, and irrigated with the results as before shown.

Mr. David G. Fairchild visited Egypt in 1901, and a year later, acting as agricultural explorer for Mr. Barbour Lathrop, of Chicago, he went to Arabia, Persia, and Beluchistan in search

of choice date varieties. He introduced the standard second-class sorts, Halawi and Khadawi from Bassorah, the Fard date from Maskat, as well as many better sorts that do not reach the American markets. Among the latter, the Khalasa date deserves mention. It comes from the interior of Arabia, some sixty miles west of the pearl island, Bahrein, from a region called Hassa. It is considered by the celebrated traveler, Palgrave, to be "the perfection of the date." A number of offshoots of this variety are now growing in Arizona.

Finally in 1904–5, Mr. Thomas H. Kearney visited the Djerid date region in the Sahara Desert in Southern Tunis in order to study date harvesting and curing and to secure the celebrated Menahker variety — a sort much larger than the Deglet Noor, and of equally fine flavor.

He studied in detail the date harvest and secured nearly sixty varieties, including the Menahker, now nearly extinct in its native oases. Mr. Kearney finds that in former times the Bey and other high dignitaries were excessively fond of the Menahker dates and frequently appropriated the entire crop, neglecting, of course, to pay for them. Finally the proprietors, in disgust, stopped planting the variety and even went to the length of cutting down old palms in full bearing.

Mr. Kearney fortunately was able to find a few surviving palms still bearing offshoots. Only with great difficulty and by the exercise of much diplomacy did he finally succeed in inducing the owners to part with nine offshoots of this precious sort, and even then six of these offshoots were so small that little hope was entertained of their growing. Great care, however, was given them on their arrival in this country and all of them are now growing.

Besides the date-palms secured by expeditions sent to the deserts of the Old World by the Department of Agriculture, many other varieties have been secured by correspondence with native Arab merchants, European managers, and American consuls, until now both Arizona and California can boast of having larger and better collections of varieties than are to be found in any single oasis in the Old World.

When the climatic conditions of the Salton Basin were understood by Mr. Swingle he urged the immediate establishment of

an experimental date garden there, and Mecca was chosen as the site. It had already demonstrated its kindness to the fan-palm in its native state and in addition a date-palm had been growing successfully for the past fifteen years at Indio, only a few miles away. Some two hundred to two hundred and fifty pounds of fruit a year are said to have been produced by this palm in recent years.

In 1904, Mr. A. V. Stubenrauch, assistant horticulturalist of the University of California, directed the planting out of about seven hundred trees. Of these not quite half are now living, most of them thriving and doing well. Mr. Swingle has taken and still takes the greatest possible interest in the farm and visits it as often as his duties in Washington will allow. The Deglet Noor, which does not ripen well in Arizona, is expected to ripen here, as the temperature in the summer season is warmer than in its native Saharan oases. The summer is warmer and comes earlier than in Arizona, melons ripening in the Salton Basin some three to four weeks earlier than in Arizona. The mesquite also blooms some fourteen days earlier as well as bears earlier fruit.

Palms at Hanlon ranch

In 1860, also, Mr. Hamlin, one of the oldest settlers at Yuma, planted several palms from the seeds of bought Mexican dates, at his place on the Colorado River six miles below Yuma, where they throve and did well, having borne fruit for many years.

The date industry in the Salton Basin is considered of sufficient importance to warrant the creation by the government of still another date garden besides the one at Mecca. Steps are being taken this year, 1906, to establish the new garden near Indio above any possible danger from the rise of Salton Lake.

A number of Deglet Noor date-palms in the Salton Basin are loaded with fruit for the first time this year, 1906, and in spite of the fact that the young trees do not ripen their fruit so rapidly as old ones and also of the unusually cool weather that prevailed during May and June, the dates nevertheless promise to

mature earlier than they do in the Sahara and in time to reach the Christmas market.

The soil should be a sandy loam. Too heavy, clayey soil does not take up water fast enough, as evaporation in the Salton Basin is exceedingly rapid. If the soil is too light, on the other hand, it does not contain enough nourishment for the plant and is unable to retain the moisture needed.

At first sight it would be thought impossible for anything to grow in so alkaline a soil as this evidently is. Analysis shows, however, that dates thrive well in Algeria where the soils contain a far greater percentage of alkali than in most parts of the Salton Basin. The date is peculiarly able to resist alkali; up to a certain extent, indeed, a small amount of alkali is to be desired rather than otherwise. Indeed it is now pretty well established that in the marvelous laboratory of Nature, provision is made in the constitution of the palm to utilize the alkali as plant-food and that, therefore, a proper amount of alkali is an advantage and not a detriment.

Other remarkably favorable conditions existent at Mecca for date growing are the facts that artesian wells supply an abundance of water, and that it is slightly warm as it comes from the interior of the earth. Cold water used for irrigation checks the growth of the palm and hinders the ripening of the fruit. With water already partially warm — warm enough for all seasons — as it comes pouring out of the wells in abundance, Mecca and the whole Salton Basin are highly favored.

The result of the experiments so far have led to the planting of a number of acres in dates, one planter alone having just put in several thousand seeds and offshoots. Under the kindly direction of Dr. Wellwood Murray, the Coahuilla Indians at Palm Springs also planted in August, 1905, twenty-four date-palms, which were supplied by the government. They were of assorted varieties and are held by the Indians of the reservation in common. So far they are doing well, and, unless the Indians grow weary of caring for them before they come into bearing, it is confidently hoped that they will become a source of palatable and nutritious food, and of revenue as well. At present all but one are alive and growing satisfactorily.

It will be apparent, therefore, that should all the palms of the Colorado Desert and of Arizona come into bearing, these regions will soon revolutionize the trade in dates in the United States, as the West has already done that in oranges, lemons, prunes, walnuts, etc.

On the trail up Palm Canyon

It is interesting to note that, unlike most fruit trees, the date is a diecious plant, that is, its flowers are borne on separate plants; one is male and the other female. While in their native state the separate trees grow in such proportion that pollenation is natural,

the Arabs have brought the culture to so high a degree that they grow only a ninety-seventh part of the male trees that Nature requires, and they artificially pollenate by binding the male flowers, with their abundance of pollen, in the sheath where the female flowers are coming to maturity. In some cases where the female flowers mature first and the fruit would be lost because of the lateness of the male flowering, they have learned that they can save the male flowers over a year and then artificially pollenate this year's female flowers with last year's male flowers.

The flower-clusters generally come about the month of April, and on the female tree will vary from five to twenty clusters, not all produced, however, at the same time. The clusters shoot up from the stem, about as thick as the wrist, beautifully

Palms in the foot-hills near Indio

enclosed in their strong protecting sheath. When the sheath opens the blossoms are found to be white, thus adding the charm of contrast to the rich green of the leaves. Each flower-cluster on the female tree produces a bunch of dates, the fruit growing in numbers on slender twigs. A vigorous tree is commonly allowed to produce from eight to twelve such bunches, and each bunch will bear from ten to forty pounds of dates.

Rain has a directly injurious effect upon the palm. It not only prevents pollenation of the flowers in the spring, but it rots the fruit and makes it drop before maturity in the autumn. The effect of the moisture is to cause a rapid fermentation of the saccharine matter so that the dates spoil when ripening. Hence the great advantage that the Salton Basin region has over other

desert areas where, however, rains come either in spring or autumn.

Though the date can be planted and grows successfully from seed, it is often found that a good date will produce a poor palm. This is due to the fact that the pollenation of the growing fruit has taken place from a worthless male tree. Hence it is deemed the only safe course to propagate from offshoots, taking them from trees of high pedigree. These offshoots spring up from around the base of the trunk, and reproduce the parent plant exactly. They are produced abundantly by young palms, but cease to form when the trees are from ten to fifteen years old. When the offshoots are from three to six years old they can safely be removed from the parent stem and transplanted. They require an abundant and steady supply of water.

While the date-palm requires great heat to develop its fruit, it is capable of standing considerable frost. On December 24, 1905, the thermometer at Mecca was down as low as 18° Fahrenheit, and while young, weak trees were killed, as well as recently planted offshoots that were not yet rooted, the older trees showed no ill effect from the frost.

Altogether the subject is a most interesting one, and I confidently expect that a couple of decades from now will see the major portion of the ten million pounds of dates used annually in the United States growing in the highly favored localities of the Colorado Desert, or similar places in the sister region of Arizona.

CHAPTER XXVII

The Burro on the Desert

IN the desert fourteen-fifteenths of the travel away from wagon roads would be impossible without the burro. It is the standby of the prospector and the desert enthusiast.

Centuries before the camel was brought to our American shores the burro had proven his worth, had demonstrated his strength, endurance, and reliability. Sweet-tempered and patient, too much of a philosopher to ever hurry or worry, he becomes a mental and spiritual guide, voiceless but practical, unobtrusive but insistent, to every intelligent man who is long in his company on the desert. I think much of the burro and his intelligence. I gladly claim kinship with him, though that means that I write myself down an ass. The burro knows many things better than most white men, even the intelligent ones — desert-intelligent I mean — such as I am *a little*. Twice burros have saved my life by finding water when my intelligence could not discover it, and often their trail-craft has proven safer to follow than mine.

True, they can be as mean as humankind at times. They will provokingly get off the trail, hide in the dark, and let you leave them behind for miles, even when they have a pack on their backs. True, they sometimes have the provoking habit of going down on their knees, purposely, I verily believe, when they are on the worst possible places on the mountain trails, and they know you will pitch heels over heads — their heads — to your eminent danger and discomfort.

True, they will wander off sometimes and leave you in the lurch if you do not bind them to you with cords of — stomachic — affection. A pint or, better still, a quart of grain three times a day makes a "threefold cord" that binds as much as love.

Yet in spite of all these things the burro is man's invaluable companion and servant on the desert.

On our trips we had three burros, Babe, Kate, and Jennie. Babe was happy in the recent acquisition of a baby, and as soon as I saw her I dubbed her Marchioness, exactly for the same reason that Dick Swiveller called the little kitchen maiden by the same name.

The Marchioness was a sweet looking, cute little creature and I was at once undone by her charms. She had a tiny, dainty, clean white muzzle, with white patches of perfect evenness and balance under her eyes. Her color was of brown, shading off into mouse, and on the course of her spine, as straight as if it had been put there by a ruler, was a line of black, reaching from between her ears to the very tip of her tail.

Our three burros

But she was a deceitful piece of baggage. I shall never forget how she wandered away one night from her pseudo owner, following in the sweet moonlight some Indians or Mexicans who thought to lure her away and keep her. My friend, riding on the back of her patient and devoted mother, followed her for long weary miles over the salt-bush strewn, effloresced soils of the region northwest of the Salton Sea to Fig Tree John's. She refused to be called back home even by the voice of her own mother, and the poor rider simply had to keep chasing her, as an enthusiast chases a butterfly, or an irate sleeper a flea, and like the butterfly or the flea, whenever he dismounted to catch and tie her, the irresponsible, irrepressible, bewitching, aggravating little creature, with a flap of her long ears, a flit of her tail, and a snicker, as if in derision, would kick up her heels and run off, and the chase had to be begun again.

The way we happened to find this out was that we had been visiting at the Indian village of Martinez. We started for Mecca late in the evening. We were indifferent and careless about

roads, and the desert air and the witchery of moonlight made it impossible for us calmly to decide where we were and which road we ought to take. So blindly and wildly we drove across the desert, back and forth, up and down, as the sweet will prompted of the one who held the reins, and thus in our inconsequent shuttling back and forth — for we should have got nowhere until morning on the plan we were following, and didn't much care whether we did or not — we ran into our friend just as he had succeeded in catching the Marchioness and was dragging her behind him, a captive against her will.

But she never resented any kind of treatment, and though thus dragged home, the next day she was as naïvely affectionate, familiar, and confidential as before.

When we started off for the Brooklyn Mine I took the box of the wagon and Van rode Kate and was to drive along Babe and Jennie who were packed.

Jennie

He confidently expected the Marchioness would follow. She did, but it was her own sweet will, rather than her mother, that she followed. Unconscious of his difficulties, we in the wagon ahead slowly plodded on, until in desperation he decided to leave her behind. Fortunately she was cared for in our nine days' absence, and having perforce become weaned in this time she found herself henceforth, to her mother, merely as any other burro, and the sweet relationship of mother and daughter ceased to exist.

The burro has been made the object of many a poet's lofty strains. Here is a quatrain I found in the heart of the Colorado Desert posted on a prospector's cupboard door. I congratulate the unknown poet.

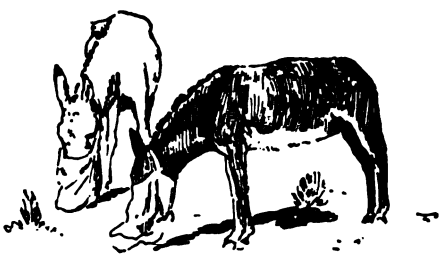
> "I am a burro, the loftiest peaks all unafraid I scale,
> Picking my way, sure-footed, along the dizziest trail;
> I lead in pioneering work which, but for me, must stop;
> I am a burro, patient, dumb, but always at the top."

While the merciful man is as merciful to his beast on the desert as in any other place, it must not be forgotten that an animal on the desert means far more to a man than in any other place. The mule or burro he has taken with him is his sole and absolute dependence. Without it his life is in danger, much travel is almost an impossibility, for man unaided cannot carry the food supply he needs, and while the desert does, in its own peculiar way, afford browse and picking for the animal, it offers but little except to the very well informed, and not much to him, in the way of food. Hence it is imperative that a desert traveler do two things: he must take as good care of his animals as he possibly can, yet he must under no circumstances run any risk of letting them get away from him. These two imperative conditions often seem to come in direct conflict, yet they must never be lost sight of or forgotten. Let me enlarge somewhat to make the grave importance of the matter clear. Many of the desert tragedies that have been recorded, and hundreds that have not, have come about through carelessness about tying up the mules or burros; allowing them to wander unhobbled in search of food; or leaving them untied (only hobbled) at night in order that they may "pick up all they can." It is in strict accordance with the first imperative condition I have laid down that animals be given every possible chance to get all the food they need, but in doing that it is more imperative still that nothing be done to jeopardize human life. An untied mule or burro, unhobbled, may be frightened away from the prospector's camp, or be maddened by a horsefly or gnats until he has traveled twenty miles. If water is scarce a hobbled animal will often travel twenty miles at night in order to reach it. I have been a personal sufferer several times from this very cause. Once on the Painted Desert our animals, all hobbled, deserted us and went back many miles where we found them digging for water. On another occasion when on the way to Lee's Ferry, I spent a lonely day in camp, my driver having started off to fetch in his horses before breakfast, and following them for sixteen miles before they were caught. Had he not been an exceptionally desert-hardened man, that thirty-two miles — sixteen on foot and sixteen on a saddleless horse — would have so exhausted him as to render his return to

where I was camped somewhat problematical. What then could I have done had he failed to return? On a road where water could be found only by the well informed, hidden away in secret tanks up tiny canyons, or under unmarked arroyo banks, no ordinary traveler can conceive the horrors of the situation. To walk in the intense heat without water is almost an impossibility. To carry provisions is to add to the difficulty, and yet to go without them equally impracticable. Then, too, it is disturbing, to say the least, to the peace of mind of the strongest-hearted to find himself in a strange place, uncertain as to the road, often where there is no road at all,— nothing but landmarks over a trackless desert,— short of water, and *alone*. No wonder that many men break down under it, grow confused, become delirious and finally perish in their aimless wanderings.

Throwing the diamond hitch

Hence the emphasis of my caution: never run any risk in tying your animals. See that your tie-ropes are of the strongest and most reliable. See that you tie only to the strongest of trees or around the base of bushes that are secure. Be ever alert in this regard, as one act of carelessness may cause the loss of your life, as well as those of others who are dependent upon you. In my "Indians of the Painted Desert Region" I have explained how an animal may be picketed to a hole in the ground with perfect safety, so that there is no excuse for not tying up securely even though there seems to be nothing to tie to. If animals are thus tied up at night it is necessary that a day-rest be taken, their packs removed, and an opportunity given to them to eat whenever a place that seems to afford feed is reached. In the daytime they can be watched, and while vigilance must not be lessened it is then more readily and easily exercised.



Burros' lunch time

CHAPTER XXVIII

A Tramp from San Diego to Yuma

OTHING can give a clearer idea of the desert than days of traveling over it. General descriptions are often confusing on account of the impossibility of properly locating the many and various objects described. In a detailed description of a trip from point to point, however, the reader can look upon the map and follow, step by step, the journeyings of his author and thus gain a true conception of at least that part of the country described.

For this reason I propose to devote several chapters to trips that few people nowadays make,—trips of hot, weary days of tramping, and, as a rule, cool, delicious nights. Three of us—Mr. Carl Eytel, the artist, Mr. Lea Van Anderson, my general assistant, and myself—were concerned in these trips. Sometimes one and sometimes another wrote the description; sometimes one went alone, sometimes all of us together; but to secure uniformity in the narrative I have written all the accounts in the first person and as if we had all been together.

We purpose to tramp from San Diego to Yuma, across the desert, on the historic trail of Kearney and St. George Cooke, where the Army of the West met its sad defeat at San Pasqual and the gallant Captain Johnston lost his life.

On the summit of Spring Valley Hill we turn to bid farewell to the Pacific Ocean, which gleams, a polished mirror, bordered by the green beauty of the verdure and the rising hills, fifteen miles away. Peeping through the rich green veil stand the walls, towers, and shining roofs of San Diego. Before us, beckoning to the east, rises hill after hill, clothed in somber green, mysterious and silent. Down through the valley, past lemon groves and

wheat-fields, leads the highway, showing a ranch-house here, a patch of cactus there, now a cluster of oak trees and again chaparral and fields.

At noon we rest under the shade of willow trees in which the blackbirds chatter. Two Indian lads come along, chasing a goat. The boys are trying to lasso the goat, but the animal evades the noose that circles over his head many times before it is finally caught securely on one horn and thus leads to his capture. Then an Indian woman, with a bundle of clothes, comes to the near-by pool, and we are soon in interested conversation. She tells of the rainless years that have made more wretched the poverty of her people; of the avarice of the whites who constantly seek to get possession of the little land she owns; of her efforts

El Campo

to hold on to it. Her sister is married to one of the leading men of the Cocopah tribe, and wished her to go and live with them, but the journey is long and she prefers to live and die on the soil that she has known and loved from childhood. She tells of her husband who warned her against the whites and especially the white lawyers, and then it develops that her husband was a white man and perfectly familiar with the snares and pitfalls of the law.

We bid her adios! as many miles are ahead of us to be traveled. We find a dry country, sparsely settled, and the few inhabitants living in hopes to see the rain after several "dry" years. How beautiful this region would become if a stream of water could be made to flow through it!

Now we pass through Dulzura and Potrero, a valley enclosed

by mountains which rise higher and higher to Mount Tecarte, on whose brow a forest fire makes a smoke-wreath.

At last Campo is reached, the terminus of the stage line from San Diego. It used to go through to Yuma and then on, and on, crossing deserts, plains, mountains, and rivers to St. Louis, and the old stage-station here is full of memories of those early staging days. The massive stone walls, too, of the old store, built to withstand Indian attacks, the custom-house, the old custom-house officer, could all give lively accounts of exciting times in the former days when Mexicans and Indians from across the line, and bandits on this side, kept things from stagnating.

Campo is an ideal place for the romancer. Here he may dream under the shadow of mighty oaks while his eye wanders over green pastures. He may take his gun and follow deer, wildcat, and mountain lion, or visit Indian rancherías and learn of the life of this fast dying out aboriginal people.

Ruins in Hill's Valley

It is very early morning when we leave, passing the silent houses, the valley pasture, and the lone schoolhouse. Our road soon gleams like a white ribbon in the morning sun, playing hide-and-seek, yet never so charming as when it leads us into a green spot where we find clear, cool water. For we are near to the desert now, and the heat of October keeps the body very dry and tramping is not easy under such conditions.

Soon the ruins of a stone cabin and stone corral walls indicate that we are at the abandoned stage-station of Hill's Valley. But everything is deserted. There is neither man nor animal here, nor do we see a living creature while we march on the sandy, uphill road. A fire has raged over the hillsides and burnt or withered all the chaparral, making the dreary waste of hills darker, drearier, and sadder. Behind the gloomy ridges new barriers loom up, while a dark blue wall seems to shut us in on

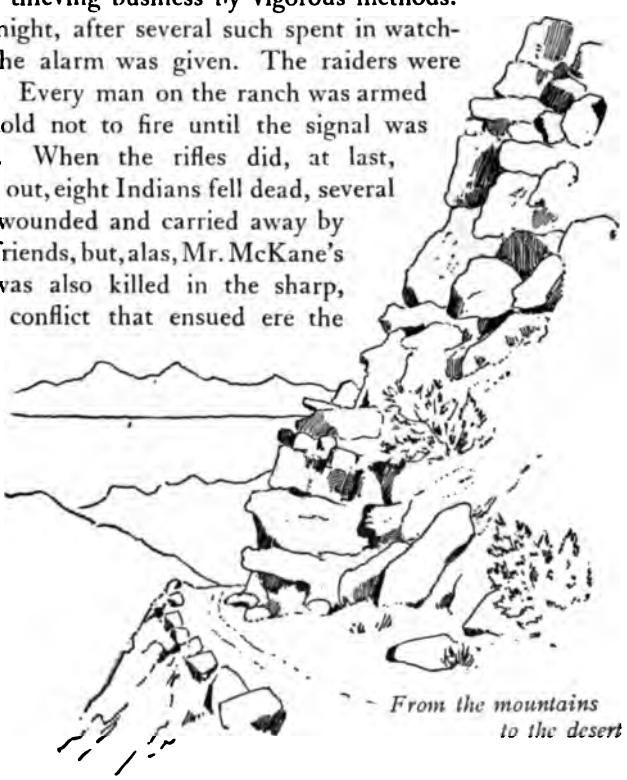
every side. Here and there are deserted ranches, silent witnesses to the tragedies that inevitably come when men, ignorant of desert conditions, endeavor to wrest from Nature what she is reluctant to give. Ahead of us is a striking, narrow gap and we picture ourselves passing through it into the desert, but the road winds us away from it back into the hills.

More deserted ranches are passed, then we descend into a valley, where ahead of us we see the grateful shade of cottonwood trees. This proves to be the Jacumba Ranch and one of the old stage-stations, now kept as a rural sanitarium by an hospitable couple, Mr. and Mrs. Foster. Not far from the adobe ranch-house are the sulphur springs, and in the bath-house, with three somersaults, you may take three separate baths at three temperatures, ranging from cold to hot, the latter being at about 100° Fahrenheit. Resting in the shade of the brush veranda we listen with interest to our host as he tells of the early history of this stage-station. How that the McKane family left their home in Texas, traveled in a prairie schooner over the plains and deserts of Texas and Arizona, crossed the Colorado River, then the Colorado Desert, and finally settled here among the cottonwoods and near to the healing waters of the springs. The *real* California of verdure and flowers they never saw. This was good enough for them. They could make a good living caring for later desert travelers, who would be glad of anything after the horrors of the desert. But it was not all restful and peaceful. They were near the boundary "line" of Mexico and the United States, and they found it had long been a natural rendezvous for the outcasts and desperadoes of both countries. No wonder when they built their adobe ranch-house the windows were made small,— just

Ranch-house at Jacumba

large enough to peep through behind the barrel of a rifle. They invested their little cash in stock, but they found it hard work to guard it. Indians played havoc with it. Raids by night were frequent and the robbers tauntingly and boldly displayed the hides and horns of the stolen and slaughtered cattle. Then the Texas blood asserted itself. It decided to put a stop to the whole thieving business by vigorous methods.

One night, after several such spent in watching, the alarm was given. The raiders were here! Every man on the ranch was armed and told not to fire until the signal was given. When the rifles did, at last, speak out, eight Indians fell dead, several were wounded and carried away by their friends, but, alas, Mr. McKane's son was also killed in the sharp, short conflict that ensued ere the remaining Indians fled. But the lesson was learned, and from that day the Indians have let the white man's cattle alone at Jacumba. The white and Mexican bandits and desperadoes are given short shrift, too, and the line-riders are constantly busy, riding back and forth, patrolling the boundary, guarding the frontier from smugglers, criminals, and the unlawful entry of Chinese. This "line-riding" is not generally understood.



From the mountains to the desert

Wherever Uncle Sam thinks there is a possibility of illegal entry of any kind from any country into our borders he establishes a frontier patrol, and, between Mexico and the United States from Yuma to San Diego, this patrol is in active, daily service.

At Jacumba we met Mr. Hutchins, the Chinese inspector, and accepting his kind hospitality, were soon listening to his interesting experiences in the discharge of his duty, which is to allow no unentitled Mongolian to cross from Mexico into the United States. A short time before he had received warning that a band of Chinamen would doubtless try to cross the line at a certain point. The three "line-riders" of Campo, Jacumba, and Silsbee joined forces and waited and watched. The Chinamen had chosen a dreary rainy day for their illegal entry. Said he: "We saw them coming and secretly got as near to them as possible. They were trudging along, doubtless picturing themselves safe in San Diego, when, suddenly, we charged them at full speed, firing our revolvers in the air. It was a surprise party! The poor fellows sank to their knees crying out in their excitable way, doubtless pleading with us not to kill them, and seemed much relieved when we merely surrounded them, bade them march on, and the following day jailed them at Campo, there to be photographed and tried for entering Uncle Sam's territory without his permission."

Out of the green valley of Jacumba the road leads upward again toward the crest of the mountains. A rapid change in the vegetation announces the very close proximity of the desert. Cottonwood, chaparral, and live-oaks disappear. The agave, Bigelovii cactus, opuntia, creosote bush, and other desert plants take their places. Before reaching the summit a sign-post attracts our attention. It is one of those told of in the chapter on Sign-boards. An iron tablet, painted in black and white, fastened to an iron post, tells us it is still ninety miles to Yuma, and seventy-three to San Diego. Friendly guardians of the desert road, how grateful weary travelers are to the thoughtful supervisor Jasper, who erected you! These sign-boards are seen at intervals on this desert road, giving not only distances in both directions, but directions to reach the nearest water.

At length we are on the crest, 3,800 feet above sea-level. What

a marvelous panorama. It is a weird vista of the far-reaching Colorado Desert. Mountain chains rise out of the grim waste and slope into it again to mix with the infinite sand-plain. Far off toward the east in shadowy blue tints are the pointed, needle-crowned mountains of Arizona. Dark green lines are drawn on the hazy horizon, and in the far distant Imperial country water is shining.

Descending the steep mountain road, we are soon gladdened by the sight that, of all others, is most delightful to the weary traveler, clear, cool, pure water, led by a pipe from the near-by hill into troughs. Close by are standing the walls of a ruined house, and under the sloping walls of one of the hills are stone corrals sufficient for the horses and mules of a cavalry regiment. Here in the old days high carnivals and revels were held. Whisky, cards, singing and such revelry as rude and wild men enjoy saw the hours pass, for here teamsters, prospectors, miners, and other desert wayfarers used to meet where there were no restraints but their own appetites and passions. And yet, the whilom owner of this desert whisky-hell is now a peaceful, useful member of society, an earnest worker in the Salvation Army in one of the cities of the Pacific Coast.

Coyote well, on road between San Diego and Yuma

Leaving here we journeyed through the Devil's Canyon, a rocky gateway and pass which does not in the least suggest to the casual eye that not far away is a mine where valuable stones and gems are found. One particular precious stone called hyacinth is found and is now being cut and marketed in quantities.

As the sun sets, the hills sloping down into the desert change suddenly from dull brown, as if the Master Artist Himself had touched them with a color full of life. They blush to a rosy alpen-glow, while the whole desert valley beneath is filled with

a flood of golden light. And the sky! A changing spectacle of emerald green, gold, and azure, playing, interchanging, blending, until finally all colors fade away and mountains and desert alike sink to sleep.

But we are still far from water. Devil's Canyon looks gloomy and forbidding, so we push on. Gradually the walls decline in height and recede, and soon we are free from them. Then the moon shows us a sign-board, "four miles" to the next watering place. Near! But too far for tired wayfarers, so, unrolling our blankets, we are soon asleep on our sandy beds.

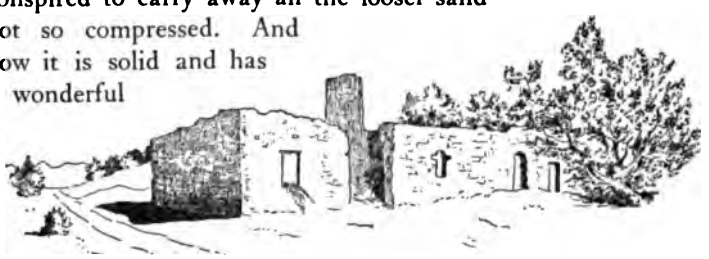
The water is found at Coyote Wells early in the morning, and used for our breakfast cooking. Then we rest all day, lounging and enjoying the scenery,— that which we had left and that which

Blue Lake, Imperial Valley

is before us. A traveler with his wife passes, bound for the settlements of the Imperial country, and that night, while around our camp-fire, a Mexican family in an eight-horse wagon arrives. When the "chores" are attended to, and the evening meal disposed of, violin and guitar are brought forth and sweet voices are soon mingling with the tones of the instruments in soft Spanish melodies of love and romance.

Then we sleep. Before three o'clock in the morning the singers are up and off, and we prepare for our sixteen-mile tramp over the desert. It is an entirely barren stretch save for a few ocatillas and half-starved mesquites. Then we pass a solitary grave of a thirst-maddened traveler, and as we do so see stretching out over the desert the deceiving mirage of lake and rocky shores. We

are safe, however, for each man has his own canteen, and we know that, with care, our water supply will carry us to the next watering place. Yet that wizard lake! How it deceives even our practical eyes! Blue mountains are clearly reflected on the placid surface, and palms are standing *in* it, a peculiar feature seldom seen. Almost instantly it disappears, and as we seek for it, another and different kind of wonder arrests our attention. The wheel-tracks of wagons and the tracks of horses are sculptured in sand and stand out a foot or more higher than the surrounding plain. What a wonderful example of the way Nature accomplishes things! Here the pressure has cemented the sand together (with a sticky admixture that made it possible). Then the winds and rains and an occasional cloudburst have conspired to carry away all the looser sand not so compressed. And now it is solid and has a wonderful



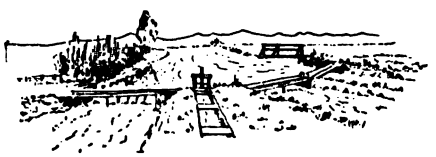
Indian wells near Silsbee

appearance. Not far away is a hill of monster oyster shells, elsewhere referred to.

A few more miles and the landscape changes again, and to our delight we find flowing water. It is Colorado River water, brought hither by the work of man. We have reached the Imperial country. And as this region occupies a complete chapter in this book we pass over its description here. We rest awhile on the banks of Blue Lake, pass through Silsbee and at night see the sky put on its pink vesture, with clouds trailing along streaked with dark red, while Signal Mountain, to our right, is aflame in astral fire.

Two miles from Silsbee, on the east side of New River, hides a remnant of the old adobe stage-station, Indian Wells. This used to be a strong and massive building, with walls like a fortress

and completely surrounded by a protecting wall. Inside this wall was plenty of water and wood, so that the station-keeper was safe from Indian attacks. How forcefully the lesson is driven home here, in sight of the green fields of cultivated ranches, how the romance of the stage-coach days has given place to the romance of the plow. On every hand now are evidences of human industry and prosperity. Calexico and Mexicali are passed, but there is little to buoy up the mind during the long march over dreary plateaus and through deep sand until we descend from a sloping mesa to the ruins of an adobe station. This is the famous Cookes Wells, dug by Lieutenant-Colonel, afterwards General P. St. George Cooke, when in 1846 he marched with the Mormon battalion from La Joya, New Mexico, to San Diego, California.



Where five canals meet in Imperial Valley

A day later we see the main canal of the Imperial Valley system, the dredger at work deepening its channel. On the canal bank sits a group of finely built Cocopah Indians, laughing and joking, doubtless at us, as we pass. Then, suddenly, they spring to their horses, which stand grazing near by, and ride as if they have to catch up with bygone centuries.

Cookes Wells

For two days we tramp along by this canal, — the former Alamo River, — and at length reach the ranch of the Algodones. This is the place of *Algodon*, the cotton plant. It seems as if this must be out of place here, this delicate daughter of the sunny South. But no, this is its native habitat as much as is the South. All through Arizona cotton used to be cultivated by the Indians long centuries before the Spanish appeared on this continent. There is a ranch-house at Algodones, and its hospitable door

opens to us, and we soon see why the Mexican inhabitants and the Cocopah Indians of the neighborhood live together in peace and harmony. There is the kind interchange of courtesies from the one side as well as the other.

Here a surprise awaits us. Our artist is busy making a sketch, a cluster of Mexicans and Indians around him, when, in picturing an Indian *kan* near by, a young Indian in fluent English asks: "For whom do you make this picture?"

"For myself!" responds the artist.

"Who gave you permission to make it?"

"I didn't ask any one's permission!"

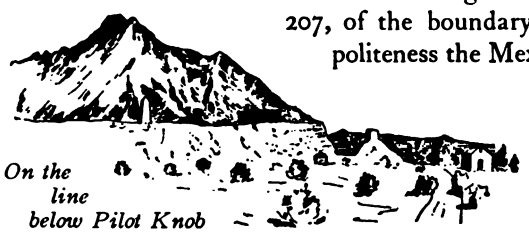
"Well! it is my business. This house belongs to me and I don't wish a picture made of it."

The artist courteously replies, "That's all right. If you don't wish it, I won't draw it!"

This seems to please the Indian and he continues: "You Americans and Mexicans have different ideas from us. You like that way of taking pictures and photographs, but we don't like it. It is contrary to our ideas to have pictures of our men, women, children, houses, or horses, because some day all will be dead, and the pictures remain and are bad memories. It is bad for us then to see them, and it is bad for the dead ones, too, that we see them. I have been in Los Angeles and San Francisco, and as far east as New York, and though asked many times I never allowed any one to make a picture of me." This superstition of the Indian is well known, but it is not often an Indian can be found who will express it as does this young Cocopah. As we talk further he gives wonderful expression to the old adage, "There's no place like home." Our great cities impressed him, but, said he: "What does all this pomp and glory amount to, compared with the peace and happiness I find here in my quiet home by the Colorado River?" True! I often ask the question myself: Have we gained in happiness as we have gained in material things?

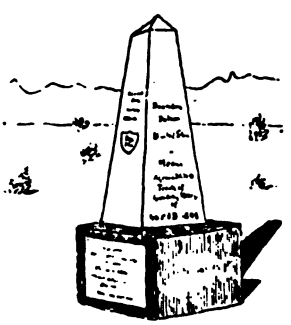
The following morning our host drives to Yuma with a wagon-load of cattle hides. The six horses have to strain and tug to pull their heavy load through the deep sand. Here are the vast sand-dunes spoken of in the earlier chapters of this book. Great

piles, several hundred feet high, stand between the ranch-house and the lowland of the Colorado River, which is now plainly visible. In the forenoon we halt in front of the adobe house of the Mexican customs official. On the high mesa to the left stands the white granite monument, No. 207, of the boundary line. With great politeness the Mexican officials shake hands all around and ask after our health. Then to business, and for four hours we stop to watch and listen to the wrangle that goes on. The custom-house officer finds it a hard task to convince the ranchero that Mexico not only expects her citizens to pay duty on the goods they import, but that she also requires that they do not impoverish the country by shipping away from it the goods she needs, and to prevent it she levies a tax upon the export of such goods as hides. This takes away the good humor of our host until, after we have driven on, the meeting of a compadre with a bottle of American *aguardiente* seems to bring back fresh sunshine.



On the line below Pilot Knob

The rest of the journey is along the bank of the Colorado, with its arrow-weed, carrizo, mesquite, and willows, and evening sees us at the old town, the scene of the labors of Garcés and his co-missionary, the site of their murder, and that of all the Spanish officers, former Governor Rivera among the number. On the east side of the river on the rocky height stands the Territorial Penitentiary, overlooking the town, just arousing to meet the new civilization and welcome it, while on the west side is the Indian school, occupying the site of the former Fort Yuma.



Boundary monument near Calexico

CHAPTER XXIX

A Tramp from Yuma up the Colorado River to Palo Verde, then by the Chuckwalla Trail to Salton

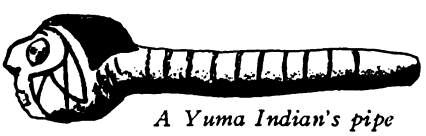
HE sun rose, a blood-red disk, the morning we left Yuma. Dark clouds hovered over the Indian reservation, but it did not keep the inhabitants from awaking. The squaws were lighting their fires to cook breakfast, the men were hunting their stock, or waiting until they were called to eat. Mesquite and palo verde are plentiful on this reservation, and, being well watered by the close proximity and frequent floodings of the river, grow luxuriantly, it being not uncommon to see them twenty-five and thirty feet high. This is the fuel supply not only for the Indians, but also for nearly all Yuma.

Leaving the valley we ascend the mesa, a dark plain strewn with volcanic rock. In sharp contrast to the yellow sky appears a saw-toothed range of mountains to the north, the highest of them, Chimney Peak,— called *Picacho* or The Peak by the Mexicans,—standing out with striking boldness. It seems a long distance away, but we know the way, having walked it some years ago. As we approach our day's destination quietness reigns in the mining camp of Picacho, where, two years ago, a large number of men were employed. Not a soul is to be seen, so, pushing forward, we walk through the canyon, five more miles, to the town of Picacho, situated on the west bank of the river. Numbers of buildings, many of which contain machinery, car tracks for carrying ore, large water-tanks, etc., give evidence that it has been the headquarters and shipping place for the mine. The ore was brought here on a diminutive railroad, and supplies hauled back. Boats then took it to Yuma, from whence it was shipped on the Southern Pacific railway. But now, with the exception of a

few families, the town is deserted. When a mine "shuts down," the town dependent upon it is "busted." Saloon-men and gamblers "pull up their stakes," women of the lower world seek fresh pastures, and all who can "haul their freight" as soon as possible. The grocery-man would go if he could. However, Picacho is pretty certain to rise again, as the "shut down" is said to be owing only to a change in management.

Yuma Indian carrying water

The day is dreary, clouds have been hanging low, and a few flashes of lightning, breaking through the dark veil, suggest the possibility of rain, so we resolve to eat and sleep indoors rather than at an open camp-fire, if it be possible. "A Mexican woman keeps a boarding-house near to the post-office," we are told, and, wending our way thither, we are soon at home, being entertained in true Mexican hospitable fashion. The landlady tells us of her father who for many years made the desert his home. He used to drive the stage from Los Angeles to Yuma and Tucson almost for the entire span of its history. In Florence, Arizona, he married a Spanish lady and then established a home in San Bernardino. We need nothing further to tell us who he was. Her father was one of the best known characters of the desert, Hank Brown, who died in 1898. What a varied and dangerous career he had! Said his daughter: "He once had trouble with the Indians at Martinez, where we lived for a time in the adobe house of the



A Yuma Indian's pipe

stage-station. They planned to kill us all while we were asleep, but, unknown to them, father had been called away. Fortunately for us a friendly squaw and her husband came and not only warned us, but took us away to a cave in the mountains, where for several days and nights we remained in safety. In the meantime the attack was made as planned and to the chagrin of our enemies we were gone. In their fury they burned our house to the ground. When my father returned he sent for the sheriff and in the fight which ensued three Indians attacked him. He was so quick with his revolver, however, that he killed two and wounded the third. Though arrested he had no difficulty in getting clear in court.

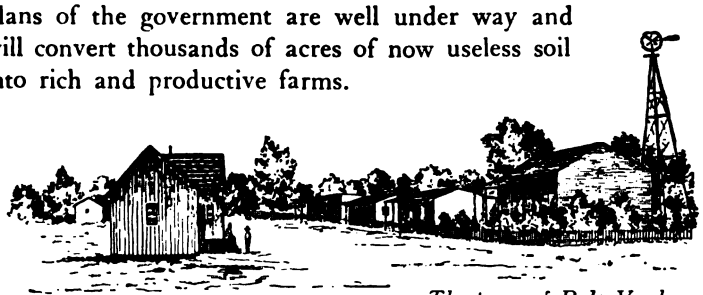
"He was an active, restless man, and seemed as if his energy

A street in old Yuma

would never give out. But he grew old and one day he said to me: 'Daughter! I will go out once more to the desert and when I return it will never see me again. I will settle down in Los Angeles, and you shall be my housekeeper and we will forget the desert.' Within a week he was dead. He went to hunt the Pegleg mine for which he had searched many years. This time he felt sure he had found it. He made the necessary locations, drew a map of the region, and completed everything necessary to make his claim lawful. Then he took the stage back to Los Angeles, but on the way was seized with sickness and two days later died of pneumonia. Feeling he would not recover, he gave a friend the map and transferred the claim to him. No sooner was he buried than this friend went back to examine the long-

looked-for mine, but, suffering intensely from inflammatory rheumatism, he scarcely reached the region before he was compelled to leave. He went to San Diego and died shortly after."

Thus the story of the long-lost mine lives, and we leave Picacho with the assurance that generations yet to come will send out men to search for this mythical treasure, the very existence of which we gravely doubt. This is the tenor of our thoughts as we walk along by the quietly flowing Colorado. What a river it is! Silent save for an occasional splash, as a salmon, catfish, or carp leaps out and falls back again, how different from the same river in the great canyon above! Soon its waters will be diverted into channels of usefulness and fertility. The great plans of the government are well under way and will convert thousands of acres of now useless soil into rich and productive farms.



The town of Palo Verde

The second day after leaving Picacho finds us at the small Mexican settlement of Milpitas, where maize, sugar cane, and alfalfa show what can be produced on this soil with sufficient water for irrigation. The river is about 300 feet wide here, and flows in long serpentine curves, and the far-away mountains, with their endless rosy crown of peaks, domes, pyramids, and needles, add that sense of charm and mystery to the scene that makes it perfect. Near here, lying parallel to the river for twenty-five miles, is the Laguna, and the land adjoining this body of water is the Palo Verde country where new settlements have sprung up, engaged in cattle raising and mining. The "town" of Palo Verde now consists of a post-office and a few houses, but, if the mines succeed and the irrigation plans that are contemplated are carried out, it may be that a few years will see this the seat of a new county. It is connected by stage with the station of

Glamys, on the line of the Southern Pacific, forty miles southwest.

Here we meet a Mr. Hickey, a pioneer in Arizona of the early days. He entered the territory when it was in its brightest and most prosperous condition when mining and prospecting flourished. At that time there were no railways, and supplies were brought by ship through the Gulf of California, up the Colorado River to Yuma, where large and long wagon-trains waited to haul them east to Tucson and to the mines, ranches, and military posts scattered throughout Arizona and New Mexico. River steamers also hauled supplies up the Colorado to Ehrenberg and La Paz, then prosperous mining camps, and here again teamsters waited to haul them into the interior.

In those strenuous days when hostile Yumas and Apaches lurked everywhere, ready to murder every white man, woman, and child as foes to their race and existence, it was a dangerous business to be a teamster. Not only were the Indians bad, but there were Mexicans and white bandits, who hovered as near to the line as they could and thought nothing of taking life if thereby they could gain a few dollars.

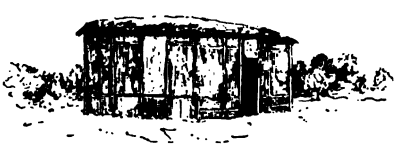
To recover a few mules stolen and driven over the line, Mr. Hickey with a friend started in pursuit. They had not gone many miles into Mexican territory before they were surrounded by a band of desperadoes. To shoot would have been folly, for they were both surprised and outnumbered. Mr. Hickey tried argument, showing how little the bandits would gain by killing them and the possibility of arousing the United States government to take a powerful revenge by sweeping them out of existence. Unfortunately the actions of his friend were such, he neither understanding the language or character of the Mexicans, that his efforts at diplomacy were spoiled, and the leader of the gang marched them to a near-by tree and gave them the choice of death by hanging or being shot. Suddenly Hickey remembered that he had a letter in his pocket from the governor of Sonora, containing expressions of good will and offers of assistance to him, and as a last resort he drew it forth and asked the leader of the bandits to read it. When he did so, fearful of harming the friend of so powerful an official, the chief bade them

begone, and in a few moments the two friends were riding away, not daring to look behind, and yet with a creepy feeling running up and down the spine all the time lest one of the angered robbers should decide to shoot them in the back. Once out of sight they put spurs to their horses and did not slacken rein until they were safe again in Uncle Sam's territory.

The next morning before leaving we visit the schoolhouse. The teacher, a refined young woman, is but a type of her kind. She also is a pioneer, exactly as are the men who open the mines, dig the irrigating ditches, clear the land, and cultivate the soil. She is an important factor in the development of the country. In Palo Verde the school was first taught in the shadow of a large mesquite, then in a brush hut, and now in a rude frame hut. By and by let us hope it will be in a more pretentious and suitable building.

North Palo Verde mining camp

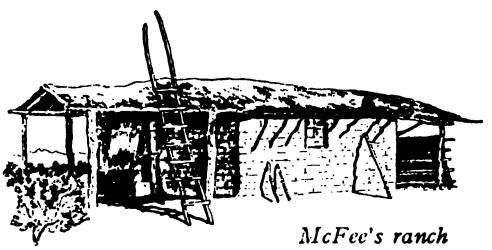
The settlers of this new country came from the "inside," as they designate the territory outside the desert, and they are therefore familiar with the process of irrigation upon which they here rely. With pumping plants they raise the water from the Laguna and distribute it over the land, though those who live between the river and the Laguna rely upon the usual overflows of the river, which generally occur between May and July. As soon as the ground dries sufficiently they plow and harrow the soil and then sow their barley and corn. When these crops are harvested sugar cane is planted in the fall, while in the earlier season potatoes, peas, beans, melons, chili peppers, and such vegetables are raised. The winters are mild and the summers hot, the temperature ranging as high as 110° and 120° Fahrenheit. Here, then, are conditions analogous to those seen on the Nile.



Brush schoolhouse at Palo Verde

Indeed the Colorado River might well be called "the Nile of America," as the lowlands of the Colorado are equally fertile with those of its African prototype.

Six miles from Mr. Hickey's ranch we reach the adobe house of the oldest settler, Mr. McFee, who "took up" his land in 1886. He keeps bachelor's hall and does his own cooking, washing, house-cleaning, and chambermaid work, as well as his planting and reaping. He has located close to the Laguna, which is here bordered by thousands of trees and dense arrow-weed, etc., thus affording an excellent retreat for wildcats, raccoons, coyotes, hawks, and owls. Mr. McFee had just shot a fine specimen of barn-owl, and was preparing the skin to make a warm nest for his chicks.



McFee's ranch

Here we met a prospector who was recuperating after a severe experience on the desert. He was prospecting in the region of the Chuckwalla Mountains when his burros strayed away, doubtless lured by the wild burros that are often to be found where there is water. He started off to hunt for them, but both provisions and water gave out and he was in dire straits. Then, fortunately, he struck the trail leading to the McFee ranch, which he no sooner reached than he was cared for and bade to make himself at home. And, such is the hospitable spirit of the country, there he will remain until he has entirely recovered from his arduous trip.

Leaving McFee's we strike out and soon come again to the river. Meadows of dried grass, which show how heavy is the growth after a rainfall, dense groves of mesquites, willows, and cottonwood, and acres and acres of arrow-weed line the river, while on the eastern side the sun-brightened mountains are coming nearer. Here we see the visible remnants of a desert tragedy. In the heart of a thorny mesquite stands part of an equine skeleton. Examination shows it to be the head, neck, breast, and front legs

of a colt. The head is turned back in the agony of death. Held by the sharp thorns the poor creature was attacked from behind by coyotes and his hind quarters literally torn from him and carried away. All around the bush are to be seen the hoof-prints of the mare in wild confusion, clearly showing her frantic but futile efforts to save her offspring from the murderous attack of the ravenous coyotes. In these mute remains and signs one can read the whole story. The mare and colt were doubtless feeding, the little one having strayed some distance away from its mother. While thus separated, hungry coyotes attacked it, and in its frantic efforts to escape it plunged headlong into the mesquite and was unable to extricate itself. The mare, hearing its calls of agony, rushed to render assistance, but was unable to force her way into the brush and drive off the relentless

Ehrenberg

coyotes, and ran around and around in wild, purposeless endeavors to help. As soon as the coyotes had torn from the quivering flesh the food they wanted, they fled to their holes. Something doubtless prevented their return for the remainder of the feast, hence the remnants we saw.

A little distance farther, and the presence of adobe houses, brush fences, and a couple of Yuma Indians denotes that we are opposite the town of Ehrenberg. The two Indians lead the way to a boat and with long strokes row us over to the Arizona side where, nearly dead, lies the once active, busy, and bustling mining camp and shipping point of Ehrenberg. The houses are empty and tumbling into ruins, all their former inhabitants gone, with the exception of half a dozen whites and Mexicans. Back of the town on the hill is a most desolate graveyard — for a deserted and neglected graveyard is one of the most desolate

places on earth — where irregular stone piles quicken the imagination until it sees visions of the days of activity, of strong, primitive passions, of the angry word, the swift blow, the smoke of the revolver or gun, and the quiet procession to the last resting place on the hill, while the silently flowing river steadily moves on to the sea. Many are the sad secrets buried under these shapeless cairns, — ruined lives, broken hearts, wasted powers, demolished ambitions, — speaking of the endlessness of the Passion Plays of poor, tragic, human life.

Ehrenberg from the Colorado River

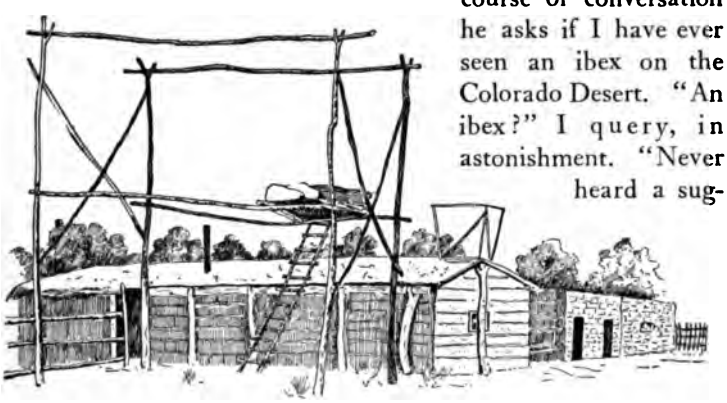
Poor Ehrenberg! He was an accomplished miner, — the man who founded the town. He came to a tragic end. There had been trouble with the Indians at Dos Palmas, and one night Ehrenberg was there. Hearing a noise outside he went to the door to see what it was, and in the dusk the Indians, taking him for their enemy, fired and killed him.

On crossing the river again to the western side we are misdirected. But the error turns out to our good fortune, for we take, instead of the old "California Stage Road," a road six miles south that leads us to "Old Brown's ranch." The pioneer whose name still clings to the place died several years ago. He was one of the restless, active spirits who, after wandering about, mining and prospecting for many years, settled down in these "bottomlands" of the Colorado River and began to raise cattle. But the Mexicans and Indians stole them so continuously that, at last, in desperation, he "laid for" the robbers and succeeded

Graveyard at Ehrenberg

in killing an Indian who was running off with one of his cattle. From this time on the old man lived a life of bedevilment and terror. The Indians sought in every way to kill him, and though he was able to outwit them, he decided to quit cattle raising. So he rounded up all the remainder of his herds and "cleaned them out" at five dollars a head, and then gave himself to the raising of melons and corn. Away from wife and daughter, who refused to live with him in this solitary wilderness, the end came, and he died, as he had long lived, entirely alone.

Near here we come in contact with a very intelligent miner and prospector who has spent many years on the desert. In the course of conversation he asks if I have ever seen an ibex on the Colorado Desert. "An ibex?" I query, in astonishment. "Never heard a sug-



Brown's ranch, near the Colorado River

gestion of such a thing." "Well," he replies, "it is a fact that they are here, although I know the naturalists would laugh and scoff at such a statement. While I have never been able to get near enough to shoot one, I have seen them many a time, and there is one rancher in the Palo Verde who shot an ibex buck and I have seen the horns, head, and skin that confirm his statement."

This is remarkable if true, and I express my astonishment and desire to inquire further into the matter. Later I meet another well-informed prospector and stage-driver, but afflicted somewhat with the propensity, acquired on the box, of "stuffing" inquiring friends. His eyes light up and he heartily responds:

"I'm blanked glad you spoke that word. Ibex? Ive seen them myself more than a dozen times, and I told the story to men who called me a deity-cursed old liar, and poked considerable fun at me. They said I didn't know an ibex from a jack-rabbit. How they got into the desert I don't know. I can only suppose they broke loose from some show or circus, but I know they're here as certain as my name is Sam Temple."

Chuckwalla storehouse

I find on questioning other men, many of them perfectly reliable, that there is a wide-spread idea that the ibex does roam and climb on the desert mountains, and the reason for it is very clear and the explanation equally simple. Young mountain-sheep have horns that grow out rather straight, not at all unlike those of the ibex, when seen at a distance, and they do not take on the characteristic curve of the full grown animal until later. It is these young mountain-sheep, therefore, that are mistaken for the ibex.

Leaving the river now, with canteen filled, we are soon on the Chuckwalla road. At night we sleep on the roadside, with a fine camp-fire of palo verde wood to keep us warm through the night. What a lonely road this is! It is a true desert road. Dipping into a wide valley flanked by blue mountains, on the far horizon a group of saw-toothed mountains stand which seem to remain at the same distance all day, though we trudge bravely along. Now we are wading through deep sand, then on hard gravel, while the surrounding country is covered with black, igneous rock as if it had recently been scorched by a fearful fire. There is no animal life in sight, save an occasional lizard. The signs of death are everywhere in the bones of horses and cattle, and the dried-up horns of mountain-sheep. Yonder lies a roughly made pack-saddle

Chuckwalla well

telling its own story of a straying burro, and possibly of the wandering prospector following on and on to his death. The noon hour is passed and there is no sign as yet of the Chuckwalla well. Surely we cannot have passed it. The road is well marked and we were assured that it would certainly lead to water, so we push on. Soon a change in the appearance of the country delights us. It is less barren and desolate. A trifle of green vegetation appears, to be more common later on; palo verde trees chopped with an axe are a good sign; and then a rock-wall and a tumbled-down rock-cabin appear at the foot of the hill before us, and on our arrival we find a rock-walled well, half hidden by mesquite bushes. This is the long-desired Chuckwalla well.

Dos Palmas

Here there comes over us the sadness of the desert. There are times when the desert seems to stir body and soul to joyful existence which finds expression in quickened steps and the lifting of the voice in song — to the amazement of the lizard and curious horned toad. But over certain localities there seems to hover the spirit of sadness and the soul is touched by the somber chords of past events that are still vibrating in the air. On the low hill, opposite the well, are two graves, covered with rocks to keep the coyotes from getting to the bodies. There are no crosses, no head-boards, — they are nameless graves. And yet we seem to know the whole story. The mind instinctively goes back to the days when wagons were banded together to be prepared for the attacks of bad Indians and worse white men and Mexicans, for the legends of the Chuckwalla trail are filled with stories of surprises, conflicts, and cruel deaths.

Before leaving the well we fill up our canteens to the very muzzle for forty miles' stretch before us. Forty long, weary, desolate miles — at least the first large portion of it is desolate,

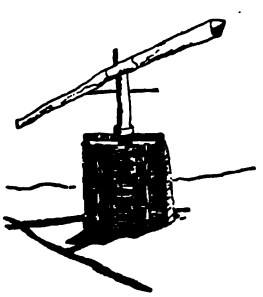
and though we draw upon their contents often, the canteens grow very heavy to the shoulders before that long stretch is over. At last we rise to the crest of the plateau, and joy! there before us rises the blue line of the glorious San Jacinto Mountains, seventy miles away. As the night sinks, a roadside camp-fire is made and we sleep the sleep of the healthily weary. No need of an alarm-clock to awaken us; we are up before the sun and as rapidly as we can, though it seems slowly enough, we begin to descend the long mesa, and cross the wide sand-wash that leads us into the Salton Basin. Sandstone formations of fantastic shape attract the eye and tell of the power of atmospheric agencies, fierce wind and sand storms and the dashing of cloudbursts and mountain torrents. For this is a region where the elements often battle. It is nothing rare in the rainy season — which is generally in August or early September if it occurs at all — for a torrential rainfall to flood this country in a couple of hours and send masses of water, scouring out gullies and washes, down into the Salton Sink, there to be evaporated in a few short hours or days.

Soon we reach the approach to Canyon Spring, but it is closed to us, not by an angel with a flaming sword, but by a dead horse, whose fly-covered carcass blockades the narrow entrance and forbids our reaching the water. But our canteens still contain a little of the precious fluid, and the dead creature suggests that perhaps the water has earned its reputation of being arsenical, as well as bitter and nauseating with alkali. Before night we reach the tents, cabin, and corral of the Oro Copia Mining Company where we stop. Eighteen miles away this company of California capitalists has its mine. Water, almost as precious as the gold they seek, is piped from this post, and emptied into a reservoir that holds 28,000 gallons. It is needed not only for drinking purposes but to work the machinery and to operate the smelter.

Our canteens hang empty on our shoulders. There is no more danger of thirst, for in the morning, only a few miles farther on, are palms rising out of the desert, telling of the presence of an oasis where there is an abundance of water. It is Dos Palmas, well-loved spot of desert teamsters and prospectors; the old stage-station, where two springs supply an abundance of good water

so that animals and men can drink all they desire without fear. Without this fine supply of water it seems as if the Chuckwalla trail, with its long weary miles, could never have been traveled, for here barrels and canteens for animals and men were filled, thus assuring the needful supply. A small shack, which serves as bedroom, parlor, sitting-room, dining-room, kitchen, hall, reception and smoking room, stands close by the spring, which is surrounded by beautiful trees, carrizo, grass, and flowers to which it gives life.

Below us, seven miles distant, is the edge of the wide Salton Basin, like a blue inland sea at this early hour, but soon, in the glaring sun, to appear as if of dazzling white marble. There rise the wooden buildings of the Salt-Works, in this early atmosphere looking like castles uplifting their proud heads from the level of the plain. Near by is the railway station whither we shall soon be hastening. Shall we be glad to reach the depot and find ourselves on the train whirling again into civilization? The trip has been hard, but it has had more than its compensations. We trudge on through the sand and reach the Salt-Works, which, however, we will not describe here as they find place elsewhere, and hope again, some day, to tramp over the Chuckwalla trail.



A mill for making adobe brick

CHAPTER XXX

Out to the Brooklyn and Granite Mines

T was the day after the San Francisco earthquake that we started. We knew there had been a "shake," but it had not penetrated our conceptions that it was anything serious, so we went off into the solitudes totally unconscious of the gigantic tragedy being enacted up north.

For about four miles the upward pull is out of the Salton Basin to the "rim,"— the old sea beach, the level of which can be followed scores of miles in both directions. Across the valley, on the point below Fig Tree John's, it has left clearer markings than in any other place. It appears like a white wall of masonry, and as near as the eye can discern is on exactly the same level as the beach on this side.

As we approach nearer to the mouth of the canyon a wonderful object lesson is presented of the way in which Nature is working to change the condition of things. Millions of tons of gravel, sand, and silt have poured into the Salton Basin down this canyon, which is so small as to appear a mere insignificant scratch on the face of the mountain range when seen from the distance of a few miles. The nearer we get to the canyon's mouth the larger are the rocks brought down in the wash. The débris evidently piled up higher and higher until it was making for itself quite a promontory in the inland sea. Then, either before or after the evaporation of the waters, a tremendous freshet or flood came which cut deep into the recent deposits and washed them farther down. The banks of this channel still remain, and in a large measure they control the flow of the present storm-waters down Box Canyon. Within the canyon we are at once in a region full of questionings and surprises. The walls are of a crumbling clay and sand, with layers of gravel. Side gorges come down

on either side into the canyon, which, at this time, is beautiful with a large and varied flora. About half-way through a dim trail leads off over the ridge to the south to a water-hole, which occasionally has been of good service to travelers. It is in an arroyo known as Sheep Hole Wash, near to two small groups of palms. From the ridge one gains an idea of the barren desolation of this mountainous region. No words can express it. And to see the few palms quietly resting in this sheltered nook gives one a singular sensation. There was no water to be found when I stood at the bases of the palms, but it is possible that if one were to dig he could get a small supply.

Starting on a trip

That night we camped at Shaver's Well, which was sunk in the "wash" of the canyon by the county officials. The water is fairly good and the act of sinking the well is one that should be emulated by all the desert counties at convenient intervals along all the desert roads. From this resting place we crossed the head of Crawford Valley into Cottonwood Canyon.

This canyon is a pass through the Cottonwood range from Crawford Valley to Pinto Valley and is about three miles long. Approaching it from Box Canyon no possible entrance can be seen, but on nearing it the mouth is found to be nearly a third of a mile wide. The walls are not very high at the mouth, but they increase in height and ruggedness the farther one enters. Almost at the upper end they narrow materially until it is a distinctive canyon. The bed of the wash is of loose gravel and is therefore hard to travel. It is a desert canyon, yet owing to the rains it was full of rich beauty when we went through it twice in April, 1906. There were the ironwood, the palo

verde, and a few mesquite, with the ever-present creosote bush in full flower.

When near to Cottonwood Springs — not more than half a mile away if one were able to go directly over the range — the road used to make a wide detour around, of some three or four miles. The county officials were requested to construct a road over the short route, but with a stupidity that seems incredible, instead of having the county engineer or surveyor direct the work and expend enough money to make an easy graded, well-built road, they put the job into the hands of a local politician who spent three or four hundred dollars of the county's money in constructing what the teamsters call a "Chilcoot Pass," and over which only extra well-equipped wagons can pass. A light buggy with a good horse can go over with little trouble, but a two-horse wagon with an ordinary load finds it practically impossible. So, in our case, the wagon took the long road around, while I walked over to the spring. This is a beautiful little oasis, shut in by hills, and where half a dozen glorious old cottonwoods, dignified, hoary, and majestic, give gentle seclusion. Close by, seeping out of the rocks, is a steady though small supply of water, hence this has become one of the most noted resting places of the region.

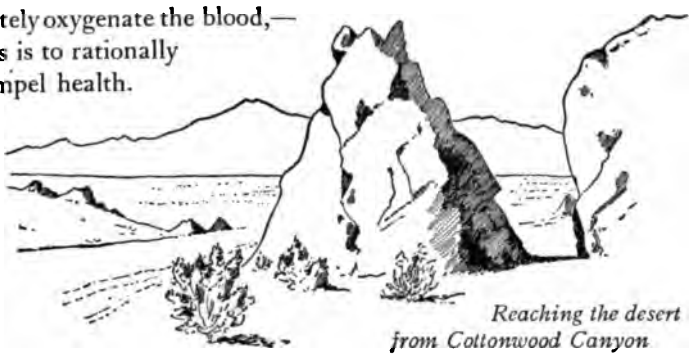
When Van came up with the burros we turned them loose to browse and then enjoyed getting our supper and sleeping under the trees.

Early the next morning I walked and climbed alone over the hills for about four miles east to spy the region over.

It is one wild chaotic upheaval and tumblement of disintegrating coarse granite. Great masses, of irregular size and shape, thrust their heads above the general mass, and stand, split, seamed, creviced, shattered, jagged, and rough and in some cases rounded by water and weather, in dumb protest against the fierceness of the desert sun. This is a part of the Colorado Desert. Yet how different from any ordinary conception that one has of the desert. This range is but one of many such ranges, just as if some Giant Power soaring through the heavens in an air-ship worthy his power had tumbled out, here and there, at his own irresponsible will, a mass of rocks to descend and cover the nakedness and

barrenness below. It is naked and barren, but it is not level and monotonous. It is rugged and uneven, hills and hollows, buttes, ridges, hogbacks, canyons, "draws," slopes, and peaks. There is no order, no system, no clearly defined "backbones." As far as the eye can reach in every direction it is practically the same. There are two exceptions, however. To the west there towers above the near-by ridge the snow-clad jagged summits of San Jacinto. Then as the eye travels a few miles to the south the continuation of the range is seen, with a clean indication of a valley between it and the southern ridge of the range from which we look. This, of course, is the Salton Basin. We should know this anyhow, for yonder is the snow-dotted peak of Santa Rosa, and we know the jagged contour of the San Jacinto range, which appears as if some rude wood-carpenter with the crudest tools had tried to chop its summit to something like uniform height and had made a poor job of it. Here, immediately before me, for I sit facing a trifle west of south, is a breakdown in the Cottonwood range, and beyond it the Chocolate range is just beginning to rise in height eastward, so I can see clear through to the sea-level of the desert, and there is the western end of the Salton Sea, some five or six miles of it, embosomed in the heart of the rugged mountains. How blue and smooth it looks! How out of place in this wild, desert setting! How anomalous!—a sea in the desert. Right where I sit I can see the grave of Riley, who perished for want of water. Behind me I could rudely locate the graves — or piles of bones — that tell of scores of men who have died horrible deaths for want of a few spoonfuls of that precious fluid that lies yonder so unconscious and unconcerned in the distance. What a singular thing life is anyhow! Why will men leave the side of the lake? What do they gain by courting death on the desert? What is it in man that thrusts him forth into the most dangerous and inhospitable parts of the earth? Yonder to my right is the Cottonwood oasis. Without the few hundred gallons of water which daily flow into a reservoir built for it, no man could live in this region. Those few drops of water render life possible. Under the shelter of the cottonwoods this morning I heard the cough of a consumptive. Two brothers are there for a short time. They have just

completed the making of a "dry washer," with which they will seek to shake gold out of the gravel they find in some parts of these desert hills. They are here seeking both health and money. A wiser selection of a location for a health-seeker one could scarcely find. Here, away from cities and the crowded, badly ventilated, stuffy haunts of men; away from elaborate cooking which kills far more victims than the disease itself does; sleeping in the sweetest, purest, balmiest, and most healing atmosphere of earth,—an atmosphere that after sundown and before sunrise one can designate only as delicious,—compelling himself to just enough exercise to stimulate heart and lungs to their best action, and thus completely oxygenate the blood,—this is to rationally compel health.



Reaching the desert from Cottonwood Canyon

And if the afflicted of the earth would learn the lesson of wisdom from this man, many of them could win back health and vigor, power and the ability to "do," that give life its zest to the true man.

I spoke of this as "desert," and so it is, and yet, at this season after the winter rains (which, this year, have been more profuse than usual), what a wonderful assortment of floral riches are spread out before me! From my elevated seat on this rugged peak I can scarcely see them. Only the ocatillas in their beautiful new dress of green, which completely hides (at this distance) their cruel thorns, flaunting their scarlet or geranium-colored flower-banners in the air, and the tree yuccas, with the beautiful, graceful, shining-leafed creosote bush, and also, here and there, a dwarf ironwood tree, dot the rocky, gravelly ridges, slopes, and

washes with green. But as you walk it seems that the whole area is one glorious mass of irregularly and carelessly laid-out garden; patches, bunches, beds, whole masses of flaming, gorgeous colors that are exquisitely beautiful, especially when seen in such surroundings.

And I must not forget the birds. I hear them singing all around me. Not a great number, but enough to remove the sense of complete desolation. A few minutes ago a bird flew far away below me, sweetly singing a bubbling melody as he flew. There are doves and quail and a species of swallow and several birds that I cannot distinguish. I have seen this morning two fair-sized birds with yellow bodies and sweet song, two or three tiny birds that I take for canyon wrens and numberless humming-birds.

It was rather late when we left Cottonwood, but we were soon compensated for our delay in the marvelous display of wild flowers presented to us in Pinto Valley. I have fully described this in the chapter on Plant Life. From this valley we ascended to the Brooklyn Mine, which also is fully described in its own place.

We then returned to Cottonwood, and through Crawford Valley to the Brooklyn Mine.

Crawford Valley runs almost east to west. It is practically a trough, though its length is divided by a ridge, with the San Bernardino extension on the south, and the Eagle range on the north. It slopes rapidly (for a valley) from the mountains on either side, and any rain that falls either seeps into the ground with great rapidity or flows to the trough in the center, where a "streak" of trees — ironwood, palo verde, and an occasional mesquite — suggests moisture. Though some parts of it are well flowered, others are almost bare, save for the creosote and a few other of the hardy shrubs and the ever-present ocatilla. There are no trees whatever on the slopes, and this renders the ocatilla with its flaunting and gorgeous flowers the most striking object upon which the eye falls.

The Granite Mine is located in the northwestern end of the Chuckwalla Mountains, in a deep recess or pocket surrounded by majestic granite rocks in every stage of disintegration. Seen

from a distance they are imposing, but when one stands under and near them they loom up portentously and with a grandeur unspeakable. Weather-worn, wind-carved, and sand-sculptured, they impress one not only by their massive size but by the grotesqueness of their shape. Here and there peep-holes and natural bridges have been carved by the elements, and the scenic effects, as one passes behind these apertures gazing out upon the expanse of foot-hill, valley, and distant mountains, are remarkable.

San Jacinto Peak

CHAPTER XXXI

Up Martinez Canyon, into Coahuilla Valley and back by Warner's Ranch and Carrizo Creek

IT is a delicious afternoon in May as we leave our desert headquarters at Mecca. We strike out towards the San Jacinto Mountains on the south. Their beauty and grandeur grow more impressive as the shadows of evening fall upon them, the tops receiving their nightly bath of liquid, rosy light. A wide green wilderness of mesquite lies between the cultivated soil we are leaving and the foot of the mountains, and in this tangle hide the Indian villages of the Torres reservation.

We spend the night near the Martinez schoolhouse, where plows, harrows, and cultivators for the use of the Indians make one feel he would like to be an Indian, for all these are provided for their use by a paternal government. Early the next morning we enter the broad sand-wash that leads into Martinez Canyon, so called from the village we have just left. Gradually the wash narrows and the sand becomes more and more damp until we come to a muddy stream, a few inches wide, which grows larger and clearer the higher we rise. When we reach the rocky slopes it is a good sized creek and soon it develops into a mountain stream, swift and powerful enough to give our burros considerable uneasiness every time we have to cross it. Again and again we cross, climbing higher at each zigzag, until at last we reach a place where the canyon opens out into a little flat where we find a rough stone open-air fireplace. At once we unpack and camp. A geological survey bench-mark tells us the elevation is 2,580 feet. It is an ideal camping place, the murmuring brook close by, and the mouth of a canyon named Tauquitch a few stone-throws away, while in the canyon above there is a veritable tropical

garden of cactus, many of them in full bloom. Here are the ocatillas — St. Joseph's candles — tipped with their carmine flowers in all their gorgeous splendor, while the *Yucca whippleii* and scores of *Opuntias* and *Echinocactuses* with the "candles" add splendor of color and daintiness of design.

The moon rises and adds its mellow light to the charms of this desert and mountain Eden, for, from the ridge near by we see that we are yet quite within the borders of the desert. The mocking-bird sings its notes of overflowing joy and the cicadas drum their cheery notes until long after we are asleep.

While the morning is still crisp and sharp we are up and off, our burros securely packed for the steep climb ahead. We soon

In the Martinez sand-wash

say farewell to the canyon, for our trail sharply turns upon itself, indicating that instead of more crossings of the stream we must now ascend and cross a "hogback." Up we go, higher and higher, and as we ascend the views, both of mountain before us and desert behind, grow more magnificent. We are so near that the desert is absolutely at our feet, and there, spread out beyond, is the dark mirror of the Salton Sea, a rich blue in the early morning light. For a few moments we forget we are in the desert. We are on the mountains overlooking the Pacific near Santa Barbara and this is a stretch of that placid ocean. It cannot be that we are in the desert! Yet farther glances reveal the well-known landmarks and we come back to the fact that the water of the

Salton Sea has transformed the scenery and made a new place of it when we see it from this elevated standpoint.

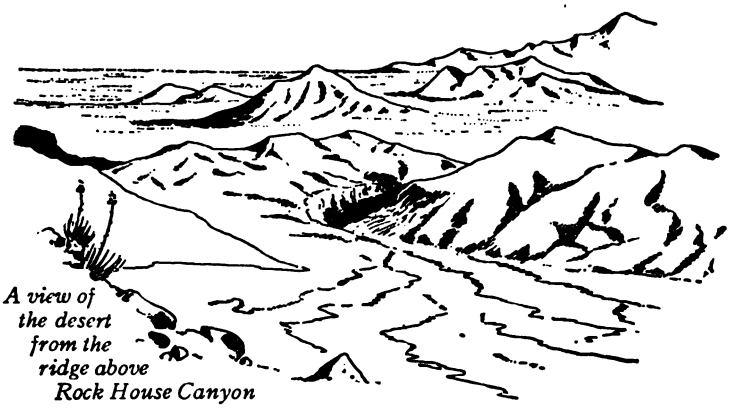
Soon we are on the summit and there we are favored with a close view of snow-capped San Jacinto peak. The white snow seems almost to swim in the air, so blue is the atmosphere, and so ethereal the blue of the body of the mountain. Only a moment or two are we here, then we dip down again, the trail leading us down the steep mountainside into the gulch below.

Wild cactus on the Martinez trail

What a deceptive thing a mountain trail is! How it plays hide-and-seek with you! Like the thimble of the "thimble-riggers" now you see it and then again you don't. Surely if we knew all about the deities of the Greek mountaineer we should find one especially devoted to mountain trails. He would be a bright, chuckling little fellow, full of fun and frolic and bent on having his humor on prospectors, herdsmen, and other followers of the trail, leading them into all kinds of mazes, then showing glorious vistas ahead, raising hopes and expectations of abundant pasture, easy traveling, cool shades, and the like, only to speedily

dash them to pieces by the stern realities of rough and rugged mountain slopes.

At last, however, we are on the top of an elevated mesa. As we cross it the shadows creep over the table-land. Suddenly, almost in an instant, without any suggestion, a peculiar turn of the trail brings us to the very edge, and, as we look off we cannot keep back the cry of admiration that bursts out at what is spread out before us. It is the desert again, but from this elevation it seems like the level bed of a dry sea reaching up to the feet of the mighty, blue mountains, whose long, massive columns of shadows advance from all directions and slowly descend into



A view of the desert from the ridge above Rock House Canyon

the barren waste. Silent and still the desert lies like a giant monster asleep. Its breath rises as a vapor and hangs over its gray, ominous body. With the sinking sun the mountains take on the hue of purple. The deep gulches, canyons, and recesses change their deep blue until it seems black, and soon the whole range is wrapped in the somber garments of night. The stars begin to shine. A loud cry is answered by an echo several seconds afterwards, and we are about to shout again, when another and fainter echo falls down as a gentle benediction breathed from the very summits of the mountains. Then the moon arises and sleep falls, the bringer of rest and peace.

We are awakened while the stars are still shining by the tinkling of the bell on "Babe's" neck. What is she after? With the

craft and cunning of the burro she seeks, while we sleep, to forage on her own account and get at the sack of oats. But we know it is securely hidden, so we leave her to her own devices and sleep on again.

If our purpose on this trip had been to find the most tortuous stream with the greatest number of awkward crossings, the steepest trails, the roughest paths, verily we have so far succeeded admirably. But we are to have further tests this morning. We descend from the mesa into Rock House Canyon, and on our arrival feel like taking off our hats to our faithful burros. Down the steep and slippery trail, in places seemingly only a few inches wide, where a misstep meant certain death, and where every now and again we either looked in expectation that they would fall, or in horror turned away and waited to hear the crash as they struck the cruel rocks below, — it certainly was a triumph of careful footing when they landed their packs in safety at the bottom.

From above, the valley appeared to be smooth. Now we find it to be the rockiest country we were ever in. Hour after hour we wander along over rocks, around rocks, under rocks, never free from them for a single moment. At noon we reach a deserted Indian *kish*. Where are the owners? We find a collection of ollas partly filled with acorns or water, and there are mortars, pestles, metates, and grinding stones. Outside is a big stone pile or oven (*na-chish-em*), where the squaws have roasted their mescal. This is made from the shoots of the agave, which grows here profusely. There is but one species in this region, the *A. deserti*. Its leaves are densely clustered, thick, and deeply concave, and are from six to twelve inches long. When they first spring up they appear in little round heads or cabbages. Each year the heads enlarge, throwing out fibrous leaves armed with a spine at the point. It takes from ten to twenty years, even in the heated air of the desert, before the period of flowering is reached. Then suddenly a stalk appears from the center of the plant, grows with great rapidity, and is crowned with a long cluster of pale yellow blossoms which hang like beautiful bells, swinging in the breeze.

In the early spring the cabbages begin to be full of sap, and from

the middle of April on the work of preparing the mescal begins. Pits are dug in the earth or sand, lined with rocks and then filled with fire. This is kept up until the rocks are thoroughly heated, when the agave heads are placed in the pit and covered with grass and earth and left to roast for two or three days. When cooked they consist of fibrous layers, sweet and delicious and full of nutrition. The ends of the young shoots also are taken and, after being thoroughly crushed or beaten out on flat rocks, are made into sheets about two and a half feet long and a foot broad, and then roasted in the pits in the same way as the heads. I have eaten the agave prepared both ways and of course the former is much the more tender and nutritious.

A glimpse of the Salton Sea from the Martinez trail

It is no easy matter to keep the trail in a sea of rocks such as we find here. We lose the trail and have to search long before finding it again. The burros, too, are troublesome where a trail is not well defined.

A stone house, the ruins of which we pass, gives this canyon its name, Rock House Canyon. A little brush shack, built close up to a boulder, suggests that the builder had the desire to dwell under the shadow of a "mighty rock in a weary land."

We are aiming for the Indian village of Santa Rosa, perched high on the mountain of the same name. The peak is ever before us, 8,046 feet high, but the cloudbursts and heavy rains have so washed out the trail that in places it has become a deep ditch, and in others has disappeared entirely. Just at this critical

time one of our burros slips and falls. In a moment all hands are at work readjusting the pack. Our map — one of the U. S. Geological Survey sections — is put down in the hurry on a convenient rock. One of the other burros, seeing the map, proceeds forthwith to eat it, and when the pack is replaced we find to our dismay that, just as we need it the most, it has almost entirely gone. As we struggle on we find how great is our loss. Cattle recently have been over the trail and completed the work of obliteration and confusion, so it is not surprising that we miss the trail to Santa Rosa and lose considerable time further on.

But night finds us happy and jolly in a first-class camping place, where, under the shade of a yellow pine, we watch the setting sun as it pours its stream of golden light over the dark green chaparral and the ever-aspiring pines. A pure stream of snow-water from Santa Rosa gives added pleasure, and affords us a good cold bath in the early morning.

The Vandeventer ranch

Soon after starting we find a wagon-road that leads through a long valley from the Garnet Queen Mine to Vandeventer Flat and the ranch of the same name. Here we give the burros a good rest and as fine pasture as the country affords, while we enjoy the hospitality of the jolly owner of the ranch, "Charley" Vandeventer, and a sturdy ranger, Joe Sherman by name. Mr. Vandeventer tells us of the days when the Indians lived by the hundreds in the nearby valleys. But as civilization has crept closer to them they have mostly disappeared, smallpox and consumption having aided the vices of the white man in furthering their annihilation. With fiddle and accordion, tales of mountain lions, wildcats, and skunks, of deer and mountain-sheep, and their destruction by pot-hunters, we pass a pleasant evening, an agreeable change from our ordinary camp-fire evenings.

In the morning we start in a cold dense fog which soon wets

OAK GROVE RANCH-HOUSE, ONCE A STAGE-STATION

us to the skin from top to toe. We have to cross several creeks, so we wade right along. Down we descend, a thousand feet, into the Coahuilla Valley. It is a long, broad valley in which many hundreds of cattle are grazing on the rich feed, and they watch us with that never-quenched look of surprise as we pass along. At last we are walking in a lane between two barbed-wire fences, which denote the boundaries of a ranch owned by two negroes, the brothers Hamilton, who are reported the owners of fine land and much stock.

We turn to the north and find ourselves in Durazno Valley, — the valley of the peach, — in which many Indians live. Beyond the Indians' *kishes* is the Clarke ranch where we are heartily welcomed by our old friend, Hardy, a prospector and miner,

The main street at Agua Caliente, Warner's Ranch

who, in the old days, used to drive stage from Tucson to Yuma and San Diego. While we dry our clothes — robed in a blanket and a smile the while — he prepares a hearty and tasty supper, to which we do full justice in our negligee costumes.

Clarke and Hardy have found this a great bee country. They have over three hundred stands, and the honey is rich and of delicate flavor and therefore commands a high price.

Our start next morning is in distinct contrast to that of yesterday morning, for the sun shines bright and clear through an atmosphere as healthful and bracing as one could desire. We pass through valleys and over hills, and through dense masses of chaparral into Oak Grove Valley where waving fields of barley and oats give evidence of well-cultivated and fertile soil. Very interesting is the long, low building shadowed by hoary live-oak trees. It is the Wentworth ranch-house, where the soldiers of the Army of the West rested on their journey from Santa Fé to

the conquest of California. Later it became a stage-station, wayside inn, posting place, and hospital where those who had broken down in crossing the weary stretches of the desert could stop and recuperate. And as we sit we see a picture which was made here not long ago. It is of the evicted Indians of Warner's Ranch, on their way to their new home at Pala, as wicked and monstrous an eviction, even though sanctioned by the United States Supreme Court, as ever occurred in history, only relieved by the fact that Commissioner W. A. Jones obtained from Congress a grant of $100,000 to secure for the poor homeless ones a new home.

Old stage-station at Warner

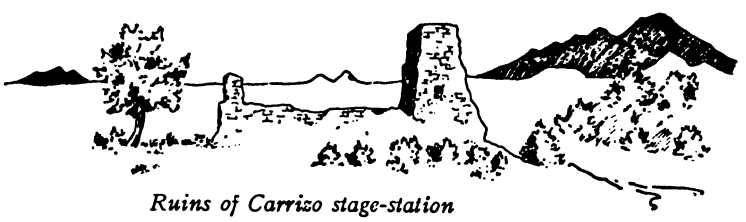
What a glorious vista these old oaks make as we journey on to Warner's Ranch! Thousands and thousands of fat cattle roam the great ranch, now a veritable paradise for cattle after the copious rains of spring. At length, as we are growing weary, we spy the adobe houses of the village of Agua Caliente (from which the Indians were evicted), we pass the forlorn and deserted church in which, in happier days, we have worshiped with the Indians. It is now in use as a hay barn. The houses have all been renovated and white people are occupying the homes in which we have visited our Indian friends many a time. The whites have come to rest and recuperate and use the baths of hot water from which the village obtained its Spanish and Indian names, respectirely *Agua Caliente* and *Palatingwa*. The water, at a temperature of about 160° Fahrenheit, bubbles out from between the rocks a short distance above the village.

San Felipe River

Here is the road leading over to the old Warner ranch-house,

three miles away. This is one of the best-known and historic spots of early-day California. For many years it was the mecca of all comers to the Golden State by way of Yuma, even the stage road to Los Angeles passing this way. It was the first real valley of plenty after the sandy wastes of Texas, New Mexico, Nevada, and Arizona, and here travelers could stop and recuperate their own exhausted energies and those of their beasts.

Warner received the ranch as a grant from the Mexican government, and had been long in possession when Kearney passed through in 1846. For many years the Indians gave him no trouble, but in 1857 a hostile band of three hundred Coahuillas attacked him at his ranch. Having received warning of the expected raid he had removed his family, but personally remained to give the Indians a warm reception. He had several horses



Ruins of Carrizo stage-station

saddled and ready for instant flight, and loaded weapons prepared to ward off the attack. When the Indians came he stepped to the rear to gain his horses, and found them all gone but one, and an Indian untying that. As he appeared a shower of arrows fell around him, but he succeeded in shooting the thieving Indian and three others. In the confusion that followed he was able to get away, taking with him on the same horse a crippled mulatto boy who had been sent by a friend to regain health from the hot springs. At Santa Isabel he found his vaqueros, and heading them, returned to see if the Indians could be checked in their work of devastation. But his men were not to be relied upon, so Warner was compelled to abandon his store, in which he had six thousand dollars' worth of merchandise, and retire to San Diego.

It is now the intention to make a popular resort of the Hot Springs, and already steps are taken to that end

We now enter the San Felipe Valley, which in shape appears to be something like a triangle with blunted vertices. The long side is toward the desert and at its end is the broad expanse of the San Felipe ranch. The old adobe stage-station has disappeared and in its place a modern ranch-house stands. About three miles away the San Felipe Creek, or river, has its rise. It flows between narrow walls for a distance of about eight miles, and is then swallowed up by the heated sands of the desert. The road seems to be endless to our gaze. It stretches on and on, now rising, now sinking, now crowded by hills, then opening out wide, but we see no pass. The road is cut across by many *barrancas*, deep gullies washed out by the heavy rains, and they compel us to take many extra steps to go around them.

At Vallecita the ruins of the old stage-station remind us again of the days when this was a transcontinental highway of travel. A few yards farther on we come to a trough filled with running water. A painted sign reads:

General Cooke's Pass

"THIS WATER IS FREE.
OTHERS ARE KIND TO YOU,
BE KIND THEN TO OTHERS
BEHIND YOU.
LEAVE THIS TROUGH
FULL."

Anxious to push ahead we water our burros, fill our canteens and follow the sand-wash until the setting sun calls us to a halt. So we stop and make a "dry" camp. Next morning the air feels sultry and oppressive and it doubtless makes the sidewinder (*Crotalus cerastes*), which we catch sight of within six inches of the trail, too drowsy to resent our presence. We kill him, not because he injures us, but on the broad general principle that it is well to reduce the number of such venomous reptiles, and pass on to Palm Springs. This is not *our* Palm Springs, but a namesake which has no palms and very little water. Had we

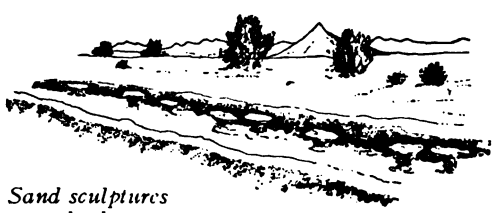
kept the road we might have gone by without noticing it, but the deep washouts caused by the rain compel us to take higher ground where we see the road leading over the hill to the spring. It is a spot of fresh green amongst mesquite and arrow-weed, wrested from the alkali and made into an alfalfa patch. There is a little orchard of peach trees, a row of grape-vines, a little barley field, a few chicken houses, and a tent all sheltered by a three-cornered limestone peak. The owner is a kind-faced, sturdy German who tries to make a living where Nature is not kindly disposed to his efforts. When he came to take it up as a homestead he had two good horses and a new Studebaker wagon. One of his horses fell and cut his flanks open on cruel and jagged rocks. He recovered only to die of starvation, for there was not enough pasturage to keep the animals alive. The owner planted barley and it came up well, but he was compelled to go to the nearest ranch to find feed for the immediate needs of his animals. Imagine his feelings on his return to discover what seemed to be all the wild and stray burros of the desert in his barley, and not a single stem left standing. They had cleaned it off clear to the ground, and he was helpless, for even in anger one could scarcely condemn the burros.

We follow down the sand-wash until the dark green of the carrizo, or reed, appears, and we know we are on Carrizo Creek. The road skirts a hill, and on its crest we find a sign that reads "104 miles to Yuma, 39 miles to water." We are at the old stage-station. There is only a small part of one wall left. Everything else has gone. Mosquitoes pester us, and horseflies torment the burros, and the discomfort is kept up after we are in our blankets, so that we do not sleep as well as usual, until a cold breeze toward morning drives them away. We need not have been surprised to find, on awakening, that our burros were gone. It takes one of us four hours to trail and bring them back, so that breakfast is later than usual. As we roll up our blankets a full-grown scorpion crawls from under them, the first and only occurrence of the kind for many long months.

It does not take us long to leave Carrizo Creek, and now we are again in the desert proper. Since we left San Felipe Valley we have practically traversed nothing but desert, but it was not like

this. Here it is the real thing, stretching out in barren gauntness, shimmering and glowing in the fierce rays of the sun.

Soon the desert greets us, in her warm and unmistakable fashion, with a sand-storm. This is bad, for in the direction we are going it is nearly fifty miles to water. We let our burros drink their fill, and poured into our three canteens every drop they would hold before leaving Carrizo, but we did not figure on a sand-storm which will make burros and ourselves extra thirsty. We only hope it will not obliterate our landmarks. Fortunately it soon blows over. The wagon-road makes a wide detour and one of us — the tenderfoot — suggests that we "cut across." We are willing to give him the experience, yet, afterwards, we wish we had kept the road. For as we cross the open country we find it honeycombed with squirrel and other holes and so washed out that the burros are afraid to tread lest they sink in and fall. Several times this happens, so that all our urgings fail to make them go any quicker than their cautious natures allow. The night comes and we are still "cutting across," so we make a dry camp in the hope of doing better to-morrow.



Sand sculptures on the desert

When morning dawns we start along, not much more briskly than yesterday, for the country is still unsafe for quick traveling and our burros are very tired. Yet we find a compensation in the color displays the desert makes for our gratification. The plain appears to be of purple, carmine, and golden-fire. Brightly colored hills rise before us and glorify the barren path we must take. Even the wearisome sand is painted in most glowing colors. Now we come to a space studded with irregular pebbles from the size of a walnut to larger than a hen's egg. Every color in nature is here represented in stone. There are red, gray, and mottled granite pebbles, jaspers, green serpentine, chalcedony, agate, hyalite, gneiss, gypsum, fluor-spar, obsidian, and many other hard stones and semi-precious gems. Though

pleasing to the eye this area is exceedingly hard to walk on and our poor burros find it as painful and difficult as we do ourselves. A little farther on are a number of dumb-bell forms and then we come to a limestone formation looking like white cauliflowers, which tells us that here is the limit of the prehistoric fresh-water lake elsewhere fully described. Several hours are taken to cross this field of wonders and then, suddenly, we find ourselves on the edge of a deep *barranca* with precipitous sides down which there is no possibility of descent. It takes us a long time to find even a passable way to get down and an equally long time to get out. Then, to our intense disgust and greater weariness, we discover that we are in a stretch of *barrancas*. Some of them are thirty feet deep and twice that in width. The sweet-sounding Spanish name does not take off one particle of the disgust or the weariness. One goes ahead to hunt out the best passageway and the other follows with the burros. We are about to give up for the day and make camp when a glad shout announces that the wagon-road is again found. That part of our journey is at an end and almost before we are aware we are gazing upon the blue waters of the Salton Sea, rippled by the winds of the late afternoon. Before making camp we slay another sidewinder, and moving on to a far enough distance for at least half-forgetfulness make camp. The burros enjoy the water inside and out as much as we do. We strip and take a swim, and how delicious it is after our long and waterless journey! Stretched out in our blankets we enjoy the setting of the sun and the rising of the moon, shedding its primrose light over the gently dancing waves. The noise from these lulls us to sleep better than the sweetest music.

Dos Alamos

Refreshed and renewed we take the wagon-road in the morning, and as we skirt the mountain's point look up to the old beach which, clear and distinct, lines the mountain above us. As we

gaze upon it and then look toward the desert sea we cannot help the queries which force themselves upon us as we think how it has slowly crept up, inch by inch, during the past months: "Will this new sea take the place of the old? If so what will become of the works of man in this valley?" Fortunately we are not required to give an immediate answer. Our hope is strong that the work now being done to prevent the further rise of the sea will be successful.

Soon we pass the little alkali springs called Fish Springs. The sea had quenched our thirst, or how glad we should be to drink of these bitter and salty waters. This used to be the first water after leaving Carrizo, and many a man has thanked God even for so poor a supply of so poor a quality, for without it he most assuredly would have died.

Eight miles farther and we are at Fig Tree John's. Rude fences appear and an Indian *kish*. A post bears a written notice under glass and framed, the ink now almost washed out by the rains:

"This ranch belongs to Juan Jack Bonito, and has been owned by his ancestors for many years.

(Signed) Juan Jack Bonito,
January, 1901."

Juan is shrewd. He has a son who is well educated, and the two have decided that it is far better to forestall the selfish white man than fight him when he has filed on and taken possession of their land.

White rumor does not speak kindly of John, but everybody knows that Rumor is a slanderer and liar. It says that he has robbed emigrants of their horses and provisions, and even their lives have been charged up to him. The only foundation for these unjust and cruel charges is that he has cared for (and perhaps used) the animals of desert parties that have strayed away and come to his place for food and water.

Just two weeks from the time we started the cottonwoods of Mecca appear in sight, and though tired and weary after our tramp we are richer in desert knowledge and experiences.

CHAPTER XXXII

Through Mesquite Land

WHEN spring comes and the happy note of the quail resounds in the valley, and the low, plaintive call of the wild dove is echoed from tree to tree, the Land of the Mesquite calls and we long to be in its embrace.

Where is this Mesquite Land, and what constitutes its charm? It is hard to tell to another the subtle sensations that compel one to affection, yet it seems that no one could see Mesquite Land in spring and not be enchanted by it. It is not a large country. It is merely the name we have given to that part of the Coachella Valley in the Colorado Desert that lies near the base of the Sierra San Jacinto. Properly the name might cover an immense region where the mesquite abounds, reaching south to the mouth of the Colorado River, north to the center of Nevada, and east into Apache Land.

In the very heart of Mesquite Land are the Indian villages of Torres, Martinez, Agua Dulce, and Alamos Bonitos. Many a mile have we tramped to and fro among the *kishes* and *samats* of these people. Torres is completely hidden in a dense thicket of mesquites. A lane of sturdy old trees, massive and gnarled like veteran oaks, leads us to a little adobe hut. We almost pass by ere we notice the form of a man inside, lying on the ground, a woman sitting by his side. We have come to the death-bed of one of the oldest of the Torres Indians, one who for many years has been chief of his people. The dying man speaks a little English, and as soon as he feels our sincere sympathy he opens his heart and speaks with touching sadness of his life. He tells of his people's coming here, in the long ago, and how, ever

since he can remember, he has helped their descendants in their sickness and want, and rejoiced with them in their joys. "But now," he bursts forth, "all of them have left me, all! all! All have left me to die alone! Only my poor old wife remains with me. When I am dead they will cry and wail, but what will it matter?"

A week later a funeral takes place, and a sad old woman remains alone. There is a large funeral. Indians come from all parts of Mesquite Land and there is much show of lamenting and woe, but "what does it matter?"

Many deeply worn trails lead us from one mesquite thicket to another, and many a mile of fence is built by the Indians from its trunks and branches. The framework of many a *samat* is

Near Indian Well

constructed of it, so that it affords homes and shelter against the sun and rain. In scores of places there is no pretense at building a framework. The tree is taken as it stands, the lower limbs lopped off to suit the convenience of the family, a few additional posts put in and the spaces filled up with brush, tules, arrow-weed, and willows, and thus a primitive and reasonably permanent home is made.

Leaving Indio we are soon on the sandy road leading to Palm Springs. The feet of men and animals sink deeply and walking is hard. To the right and left of us are immense sand-dunes, looking like the white graves of men's ambitions. Here and there are mesquites completely buried in the sand, which has blown and drifted around them until nothing but the new shoots appear. To see these great balls of sand rise from the desert floor, bursting into rich foliage, is one of the always delightful surprises of the desert.

Here and there our eyes fall upon pieces of broken pottery, and the farther we go the more we see. If the casual traveler should become interested and seek more he might make a rich strike and find a whole bowl or olla buried in the sand long ago and now uncovered by the winds. Or he will probably pick up a few arrow-heads made of flint or obsidian, clearly telling of the days when the Indians hunted the deer, antelope, mountain-sheep and other game in Mesquite Land with their primitive bows and arrows.

Here we are at Indian Well. It is a square, boarded-up well, with rope and buckets all complete, standing as one of the old landmarks on the old desert road, surrounded by hills covered with green mesquite.

In Cathedral Canyon

Back of the road, on the south, a rotunda of saw-toothed mountains beckons to us. An old Indian had told us that there are caves in these low mountains in which the skeletons of men and women are to be found and that a great Indian village used to lie between them and the water of the prehistoric inland sea. We hunt around but can find neither caves nor skeletons. Only the broken pottery and arrow-heads speak of occupation in the past. The Indians believe the whole region to be haunted. They claim that in the night-time if a man dares to walk here a peculiar light will follow him, and he will hear voices singing and talking, but no human presence can be discovered. It is a lonely region and when night falls upon us, in spite of our disbelief in the stories of the Indians, we cannot deny that we are impressed by the spirit of loneliness which seems to possess it. Even the well, standing on the roadside, ready to cheer

man and beast with its vivifying water, takes on the appearance of a scaffold, and we shudder in spite of ourselves.

When our camp-fire is lit and the brilliant gleams shoot out into the gloom we begin to feel more cheery. What scores of meetings have taken place at this old well! Prospector has met home-seeker, and miner has greeted cattle-man, the one going "inside" for a vacation, the other coming into the desert to find a place whereon to settle. Nomad here meets nomad, and around the camp-fire, with pipe alight, questions are asked and answered which make the next day's travel less uncertain and wearisome.

The night passes, we sleep the sleep of the tired and healthy, and when the new morning dawns we forget all sadness, all gloom, and push cheerfully on our way to Deep Canyon. Out of the gray desert rise the white sand-dunes, made cheerful by persistently green mesquites, and erelong we enter a lane lined on both sides with the thorny trees and completely arched over, so that for a few minutes it seems a joke to speak of being on the desert. We are in a fairy bower of exquisite grace and delicate beauty, for there is no tree that has more beautiful leaves than the mesquite, and as they stand out against the clear sky they seem like the delicate tracings of some new and rich pattern of lace. When we emerge the monotonous range of mountains is before us, the outlines seeming to repeat themselves again and again. Here are numbers of long spurs thrust out into the desert making an equal number of "bays," and into one of these we enter, this being the large mouth of the narrow canyon we seek. We travel several weary miles through yielding sand where there is no sign of verdure, ere there is any suggestion offered of the beautiful mysteries that are in store for us. A bluish rosy light now envelops the inner circle of the mountains which here assume distinct and particularly picturesque forms. There are high peaks and the rich purple and vividly black shadows that tell of deep canyon recesses. Slowly the sandy and barren waste gives place to a growth of plant life, and the shrubs and trees take on richer and deeper greens as we travel along. Hitherto there has been no sign of water, but, suddenly, the burros prick up their ears and push eagerly along. They hear the sound of water, and

it is an incitement to rapid travel that no stick or human persuasion can equal. We are soon by the side of a little stream which emerges from the canyon before us. Crossing and recrossing, it increases in volume the higher we advance. Now we are actually in the canyon and the stream grows as the waters pour in from side canyons to the right and left. Through fields of *chollas*, ivory-like but full of cruel thorns, and over rough rocky trails we wend our way until at

Cave-dwelling of Indians, Andreas Canyon

last we stop at the very gate of Deep Canyon itself. Here we unpack our burros and after lunch take time to admire the wonderful gateway before us. To the left the mountain wall stands almost perpendicular to a height of several hundred feet. The rocks of which it is formed are twisted all out of their original

stratified condition. They are flexed and curved and then set upon edge again, making folds as wonderful as the great Wheeler fold of the Grand Canyon of the Colorado River. What mighty upheavals or slow, resistless molding of the rocks this region has been subject to!

No need to urge us to face the difficulties of this canyon. We are eager to see more. So, after we are well rested, we start on, leaving our burros behind.

In Chapel Canyon

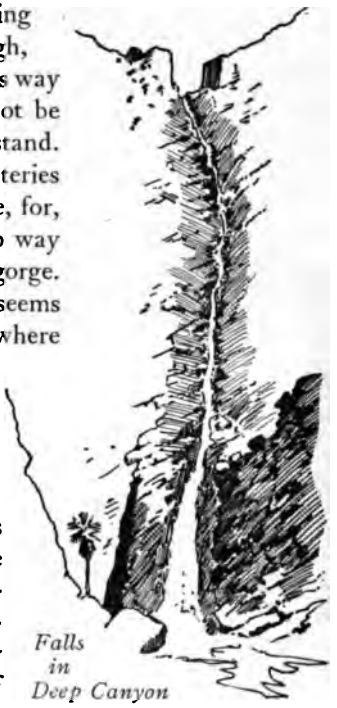
And the canyon itself! Who can describe it? A few hours ago we were on the barren, dry, featureless sands of the desert. Now we are between walls fully a thousand feet high, wrinkled and scarred with deep gashes, where a roaring stream pours down its waters with a life and sparkle that three hours ago would have seemed impossible and incredible. High up on the walls clusters of green appear against the pure turquoise of the sky. What are those suspended pictures, hanging in weird, mysterious beauty in this hidden desert canyon?

A fresh glimpse as we come to a new angle reveals them as palms! Giant palms either climbing out of the canyon to get more into the sunlight, or seeking to reach the water below. How do they sustain life up there? Are water and soil upon those rocky shelves? There must be something to feed the desert giants, for they are healthy, strong, and vigorous.

Now as we progress it is one constant crossing and recrossing of the madly dashing torrent, which rushes over rocks, and rolls the boulders along and then springs gleefully down the cascades into glistening and sparkling pools. Here we are on a narrow ledge of rock twenty feet high. The foothold is slender and

precarious, but it is all there is, so we hold our breath and walk carefully along. We make it in safety and are soon crossing the stream again, springing from rock to rock where a mis-step would give us a sudden bath and perhaps a rough shake up in the swiftly running water.

Another climb and we are standing before a cascade, about thirty feet high, which, like a corkscrew, has bored its way into the rock so that its course cannot be followed by the eye from where we stand. Nature here seems to guard her mysteries of grace and beauty with jealous care, for, on our first glances, we can find no way to progress farther in this narrow gorge. The walls are almost vertical, and it seems hopeless to expect to find any place where they can be scaled to pass this waterfall. But our wills as well as our bodies are strong, and we hunt until we find a precarious foot-path up which we ascend.



Falls in Deep Canyon

The dash and roar of the water is ever in our ears, but suddenly, as we make a sharp turn, a new and dominant voice greets us, more powerful than the many-voiced and noisy stream at our feet. A thin film of spray, too, floats like diamond mist in our faces, and we hurry forward to see what we are to see. Another corner, and behold, a wonder of glory and beauty is before us! On the right stands a stately palm, and on the left, from the height of about sixty feet, a silvery spray of dancing and falling water-pearls rains down upon smoothly polished rocks and then leaps off on to the palm and the boulders beneath. We are hushed into silence. In the presence of such Beauty man should be reverent. The glistening sun kisses the mist into a rosy blush, and we see a fairy dance of sparkling gems assuming every curve and sweep that grace and beauty could desire.

This is not all! Filled with the tender exquisiteness of it and gazing as if we could never be filled, suddenly a companion points in another direction. Gazing thitherward we see a stream of water falling from the dizzy heights above, — a waterfall a thousand feet in height. In a moment the name "Yosemite!" flashes into the mind. It is only a memory, not a comparison, for the silvery thread here cannot be compared with the volume of water that thunders down in the great valley, but here, as there, the water brings its message of Life and Beauty from the high mountain peaks beyond to the desert valley below. In the Yosemite, however, the dark green of the foliage and the purity of the granite are enfolded in a veil of blue atmosphere that enhances their exquisiteness, while here the rocks are grim, twisted, somber, and barren. The dry atmosphere of the desert wavers over the canyon and shows forth the nakedness of the rocks instead of veiling them, and the only verdure is found in the few cottonwoods, elderberries, and ash and the spined cactus of many species. Yet, in its way, it is as grand and sublime as is the Yosemite, and as well worth an arduous journey to see.

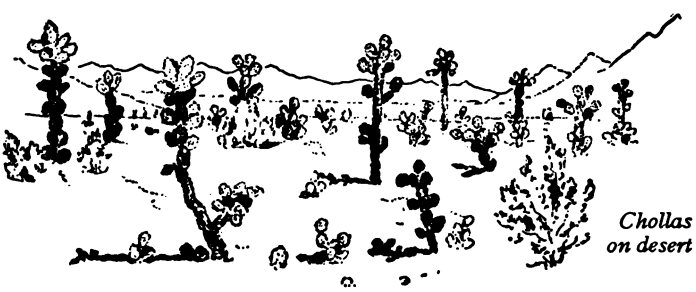
Large falls in Deep Canyon

We gaze, not our fill, but until we feel we must press forward, and soon come in sight of a deep gash in the main wall of the canyon. There must be something there worth seeing. A hard climb up the wall and down on the other side brings us to the foot of two low falls. They are beautiful, but tame after the scene we have just left. These falls are hemmed in by high boulders which completely block the canyon. We seek an outlet, but there is none. In vain we follow this suggestion of a way over, and then that. The boulders are worn so smooth by the falling waters of many centuries that they afford no foot nor hand hold. We long for a scaling ladder, for who knows what there is beyond? What possibilities of scenic grandeurs hang amongst those unscaled

cliffs ahead of us? We envy several majestic palms which stand on the rocks four hundred feet above. They may be gazing upon scenes that we should be entranced to witness.

With regret we retrace our steps, but at our camp-fire at night, out again on the sand, we recall every detail of all we saw, and thus live again the breathless moments when we first gazed upon these hitherto unknown glories. And when the last glow of the fire dies down, and we roll ourselves up in our blankets, and the stars of the desert sky make their silent way through the firmament, it is to dream and visit again the rising cliffs and yawning precipices, the cascades and waterfalls, watched over by the steadfast sentinel palms of the Yosemite of the Colorado Desert.

This year, 1905–6, has been a great year for water in the desert



Chollas on desert

canyons, hence we have seen Deep Canyon at its best. Will it be the same in drier years, or after several dry years, in succession? Who can tell? The desert canyons have their secrets which man as yet has not discovered.

Next morning we continue northward, skirting the spurs and entering the bays of the range one after another. After ten miles of travel on the road we again turn off and enter an alley of rocks which winds along until it brings us to a full stop before a bluish gray wall. At its base, in a little niche, is a tiny spring where humming-birds, bees, butterflies, larks, mocking-birds, and robins quench their thirst. We also see that the coyote, the mountain-sheep and the lynx often use it as their watering place, and there are evidences that the coyote and lynx have waited here in hiding, ready to spring upon their unsuspecting and innocent prey.

Close by, a palm tree offers its shade to the burros while we

climb up a series of wild, rocky steps, made byNature, into a small rocky rotunda. From here a second flight leads us to the second floor of what seems to be a native cathedral. Its floor is about fifty feet in width, and all around in its walls are niches for the figures of the saints. Here, "the world forgetting and by the world forgot," one may worship in one of God's own temples. Higher up we climb, and from a more elevated platform look down upon the pathway that led us to the cathedral. The palm stands like a reverent onlooker gazing up at the ecclesiastical building and showing the way hither. Beyond is the desert of gleaming sand framed on its northern shore by the faint blue outlines of the San Bernardino range.

Another day and we reach Palm Valley, which to the east and north is open to the desert, while to the west it lies under the immediate protection of the high mountain walls of San Jacinto. To the south, also, stretch the lower walls of the same range. In the days of the Southern California boom in 1885 this valley attracted speculators, who, enthused by its charm, laid plans for the erection of a desert city. They named it Palmdale. Its site was seven miles from the nearest station on the main line of the Southern Pacific railway, and, to provide easy transit to and fro, they laid tracks for a horse-car line to connect their new settlement with the railway. Work in the development of the city was begun, grapes and orchards planted out, when suddenly the water failed, and the beautiful dream of the speculators vanished. In spite of total neglect the vines and trees are still alive, but few indeed are the human feet that ever tread where once many men were so busy and so sanguine. The car track is half buried in the sand, and stranded midway between the deserted city and the station, just as it was left when the mules were unhitched years ago, battered, bleached, and beaten by the storms, sun, and sand, stands the old tram-car, half covered with sand, a type of human failure and defeat.

A few miles farther and we reach the Garden of Eden where Mr. B. B. Barney of Riverside, California, has brought an abundant supply of water, planted many palms, and started his Edenic garden, and then left it to revert to its original wildness. Here we camp awhile on the outskirts of the Mesquite Land that we have so inadequately described.

CHAPTER XXXIII

From Pines to Palms

PIROUETTING like so many clowns and acrobats are the sparks that shoot out from our camp-fire. The flames dance and circle merrily and the burning mesquite wood crackles lustily. It is a beautiful evening in February and we are camped near the old town of San Jacinto on the west side of the great range of that name, the other sides of which gaze directly down upon the desert. The morning of the start is clear, bracing, and inspiring, and it seems a short tramp past the home of Mrs. Jordan, the Aunt Ri of "Ramona," to Florida and thence up the steep grades of the mountain to the pines.

But evening overtakes us. We make camp under the long-spreading branches of a big-cone spruce (*Pseudotsuga macrocarpa*). All around us is a dense growth of chaparral, the main feature of which is chamisal (*Adenostema fasciculatum*), with several species of manzanita (*Arctostaphylos*), ceanothus, mountain-mahogany (*Cercocarpus betulæfolius*), and tree-poppy (*Dendromecon rigidum*) scattered throughout the mass. It is early and we determine to have a luxurious bed, so we gather a large pile of spruce branches and make a mattress of them on which we spread our blankets. Then in this sweetly odoriferous and soothing atmosphere, lulled by the wooing winds which kiss the pines and make them sing, we sink into a sleep, dreamless and reposeful, that few city dwellers ever enjoy.

In the morning it is hard work not to spend all the time in botanizing. The spring flowers are coming up in unusual profusion. Yonder is the big-root (*Echinocystis macrocarpa*), and as only one of us is familiar with the plant and the reason for its name, we stop long enough to dig it up. It is one of the most

wonderful water-storage plants of the mountains, being to the higher regions what the barrel-cactus is to the desert. Its root is made for water storage, and we find that the specimen we have dug is gorged for a long, dry summer. It is as large around as a man's body and full of water.

Soon we pass a lumber camp, one of those relentless slaughter-houses of trees that have taken years to grow, and that ruthlessly denude the mountain slopes of their rich clothing of pines, firs, and spruces. We recognize the need of lumber, but we are bitterly opposed to the present methods of cutting it which take no thought for the morrow, stripping vast areas and never planting a seed for the future.

Allan's Camp, a picturesque summer resort, now seems desolate and forlorn. Its tents are all dismantled, but when the

The Thomas ranch among the pines

warmer days come the merry crowd of campers will come also, and then the woods will resound with happy voices, exuberant laughter, and the songs of men and women to whom the mountains have given new life, health, and strength.

Now we are fairly in the Hemet or Thomas Valley, the former name being given because on our right is the great Hemet Lake, caused by the Hemet Dam, and which supplies the town and vicinity of Hemet with water, and the latter name being that of our old friend Thomas, after whom the mountain yonder is named and to whose hospitable ranch-house our willing footsteps are fast hastening us.

What a difference it makes when one is tired and hungry to feel that there is a glad welcome awaiting him ahead, where willing hands will minister to his comfort and cheerful voices and happy smiles make him feel at home! This is the Thomas

habit. Many a traveler can tell of the warm-hearted hospitality of this whole family, from father to youngest son, from mother to youngest daughter.

As soon as we appear kind words greet us and we are bidden to enter with the courtesy of New England combined with the hearty and spontaneous welcome of California. Mr. Thomas left the East when a young man, sailing for the land of gold in the early days of the excitement. Soon he drifted from San Francisco to Santa Barbara, where he met his fate. The smiling eyes of a warm-hearted señorita made him captive, and he abandoned the gold-fields for a happy married life with the woman of his choice. An Indian guided him to this valley of green pastures in the heart of the mountain, the pine trees allured him and so here he established his ranch, stocking it with horses and cattle, and conducting it in a manner that for years has made it one of the model ranches of Southern California. A large family of boys and girls came to bless the happy couple, but now they are all grown up and scattered save one, the youngest daughter, her father's pride and joy. He says she is "his lady, cowboy, musician, and cook." Happy the father with such a daughter, and blessed the daughter with such a father.

This ranch-house has seen not a few noted literary people. Here Helen Hunt Jackson rested while on her tours of investigation of the condition of the Indians of Southern California, and many another has come to hear from the kind-hearted lady of the house stories of the early days "before the gringo came."

It is with the regret we always feel that we leave this hospitable home and tramp along through the rich pasture dotted here and there with pines. There are five meadow-valleys like this on Mount San Jacinto, but this is by far the largest and most important. It has an average altitude of four thousand four hundred feet and includes about two thousand acres, all of which is available for pasture. The water supply comes on the north from a high ridge that is an offshoot from Tauquitch Peak, and on the south from the Thomas Mountain. The meadows contain a large amount of wire-grass (*Juncus mexicanus*) and also such grasses as *Agropyron caninum*, *Elymus triticoides*, and *Polypogon monspeliensis*. How the cattle can eat grasses with

such ponderous names and not suffer internally is a mystery, yet they seem to thrive abundantly.

An all-day's tramp is ahead of us. Clouds gather and rain begins to fall, however, before we reach the welcome shelter of the Vandeventer ranch, where kind hospitality always greets us.

It is a bright sunshiny morning that invigorates and stimulates us as we leave Vandeventer's and, swinging sharply around to the left, take the trail that leads us northeast to the desert. Hitherto we have been traveling southwest. Vandeventer's is the apex of the triangle, and we have to journey in as straight a line as mountain valleys and canyons will allow us to Palm Springs, where, if one were to draw a line across to our starting point at San Jacinto, we should find the west corner of the base line of our irregular triangle.

The trail is kindly towards us. In the main it is good, and from an elevation of 4,549 feet at the point where we leave the wagon-road it gently descends to 3,500 feet and then 2,500 in Little Paradise Valley. Now we come to the flats adorned with cottonwoods and mesquites, these latter telling us that we are once again in the actual desert zone. And how fascinating it is to study the plant growth of the various altitudes and the different zones! We have done this for years in a desultory way, but Professor H. M. Hall, of the Botanical Department of the California State University, has done it scientifically and his monograph on the subject should be in the hands of every man who makes such a trip as this. He shows that the ordinary conditions of altitude which generally affect plant growth are materially modified here by unusual conditions, such as steepness of slope, the desert winds, avalanches, and landslides, etc.

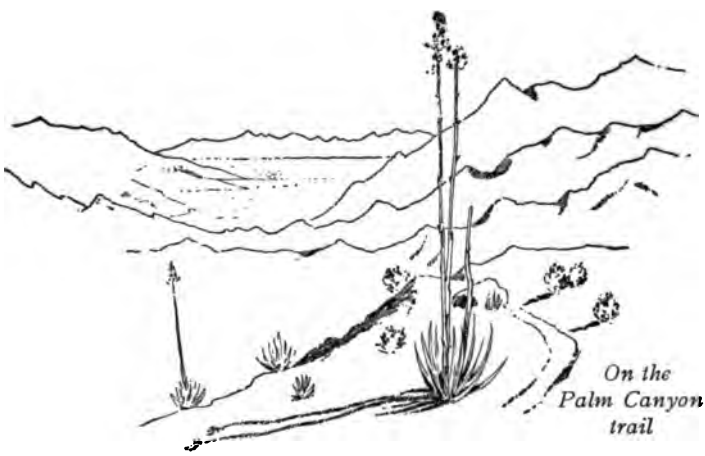
The effect of air-currents on the plant-life of San Jacinto is peculiarly interesting. On the west and southwest the breezes are the ordinary warm currents which tend to exalt the zones of plant-life to the higher summits. On the east and northeast, where naturally one expects to find these zones differing on account of the cold winds that generally come from these quarters, the very opposite occurs. For here come up the torrid winds from the desert, forcing plant-life up, far above what we find on the west and southwest.

In some places a fierce battle is constantly being waged between opposing factors which control plant distribution. One

Murray Butte, in Palm Canyon

of these is on the north side of the mountain, where, as Dr. Hall says, "on account of the steep north slopes, we should expect to see the life zones running down to very low altitudes. But

opposed to this factor is that of the warm air-currents rising from the Colorado Desert. The lower edge of the timber belt, which furnishes a good indication of the results of the struggle, is seen to be extremely sinuous on these slopes, running well out on the protected sides of all ridges and spurs, but immediately retreating to higher altitudes wherever it comes around on those sides exposed to the desert winds. This would seem to indicate that the lower limits of this belt are influenced not so much by the slowly ascending air-currents as by the hot winds, since the former would tend to equalize the temperature over all that



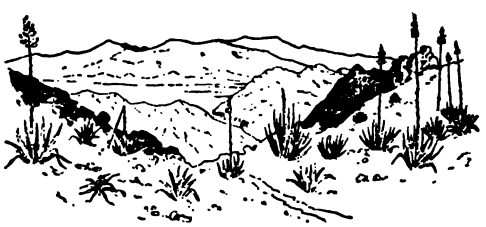
On the Palm Canyon trail

region, while the latter strike as hot, drying blasts on all exposed areas."

With discussions such as these, elicited by the varying conditions as we journey, we while away the hours. Here we rise upon a ridge, and again make a quick drop of two hundred feet or more. From the ridge we look down, and there, calm, stately, and serene, we see the first group of palms. This is the outpost, the advance guard. Higher than this they have not yet been able to come in their storming of the mountain heights. What a wonderfully interesting subject it is, this influence of altitude and climate upon the growth of plant-life! Hitherto we have been in the pines, spruces, and firs. Now we are to be with the palms, with but few of the arctic species. Yet,

while we love the palms, it is with a decided feeling of regret that we gaze upon our last group of pines. There they stand, the stately trees, in a most alluring cluster, — an island of green projected, as we look up to them from below, upon the deep cobalt of the mountain sky, — and as the clear and brilliant Californian sunshine sweeps through their leafy aisles, suffusing the whole palpitating cluster with its searching and resistless radiance, the very air seems filled with the aroma of creation and life.

Now the trail swerves to the right. From all sides the mountain seems to dip towards the canyon (for we are now at the head of Palm Canyon), and also northwards towards the desert, a white sheet of level sand (so it appears) bordered by the blue line of the San Bernardino Mountains. Here is a large garden of *Yucca whippleii*, and it seems as if we might have them all the way down to the desert, but they disappear almost as suddenly as they appear, and we see them no more.



On the trail up Palm Canyon

Now the palm trees are more frequent. One after another, individually and in clusters, they come into sight, their tall, slender boles lifting high their golden tops, crowned with green fan-leaves and looking almost like the head-gear of Indian warriors. In this canyon and at this time, they present a grand and almost awe-inspiring aspect and we are hushed into silence and delighted adoration in their presence. Down and down we go, the merry stream singing to us all the way.

The next morning is perfect, and the air deliciously cool, for the sun, though gathering strength, is not yet a fiery god scorching all things with his gaze. The desert, therefore, is not yet awake. It is dreamy and romantic. The drowsiness of sleep is yet upon its face and in its eyes. The winds as yet are but delicate breezes playing gently with the plants and flowers as tenderly as a lover touches the tresses of his sleeping love.

I remember lunching once in Palm Canyon with my wife and daughter and two friends. We found a great granite boulder that had been washed down and over until it was perfectly smooth. It had lodged near the stream, and both before and behind it giant palms had grown, which now hold it fast in their close embrace. The fan-like leaves completely sheltered the boulder. On one side there was an open entrance while on the other the water dashed noisily by. As we sat there eating our lunch we all observed the different noises made by the water,— the steady, gentle murmur of the continuous flow, with an occasional ker-plunk, ker-plunk in a deep, orotund tone, as of a stone dropped into a well. Above and around us the palms kept up their gentle

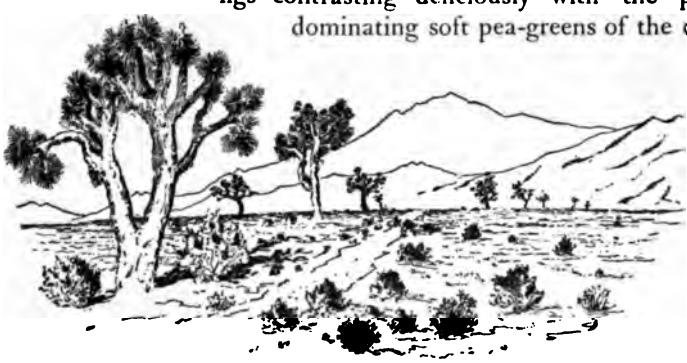
Old stage-station at Palm Springs

rustle, and gave us bewitching changes of sunshine and shade as the great leaves swung to and fro.

As we sat there in the shadow of the palms, knowing the great silent desert was just behind us, and the towering mountain peaks just ahead, we felt full of a strange, expectant awe as if some new, great, wonderful thing might happen at any moment.

The feathery fronds of the palms shut us in from all else in the world. We were alone, alone with our own hearts and God. Nature quietly intruded, however, and sent her gentle zephyrs, odor laden, to be incense at our altar, the birds sang soothingly and restfully the message of sweet peace, and the stream came down, looked at our happiness and hurried on to babble the news to all the world outside, that we were hidden in a place of joy, beauty, peace, and rest.

We returned to Palm Springs in the early afternoon, and, as we approached the settlement, it was a picture that would have charmed George Innes or William Keith. There, half a mile away, stretched a long lane, bordered on the right by fluffy looking cottonwoods of a soft pea-green, and on the left by peppers of a much deeper, richer shade. Both tones were wonderfully accentuated by the two cypress trees which form Dr. Murray's gateway. They seemed dark to blackness compared with the lighter green of the cottonwoods and peppers. The houses, white-gabled and red-roofed, were snugly ensconced under the sheltering protection of trees, the deep colors of the oranges and figs contrasting deliciously with the predominating soft pea-greens of the cot-



On the Morongo Pass road

tonwoods. To the left was the dark, somber, reddish slope of the San Jacinto foot-hills, with a rude nose or promontory bathed in sunlight setting forth in brilliancy the elevated stretch of desert beyond, upon which the brownish green patches of verdure were dotted. Still farther away reached the lower hills of the Sierra San Bernardino, dimpled and shadowed, seamed and canyoned, reddish gray and deepest purple, with their rugged and irregular summits clean cut as a cameo against a cloudless Southern California desert sky.

And coming back to this oasis, as I have done several times after weeks of weary travel on the wide expanse of desolation beyond, how sweet and blessed it all is! The leaves of the trees, with the waxen blossoms of the orange and lemon, or the blushing

blossoms of the almond and apricot, touch one as with tender hands bathed in sweetest perfume. The waters of its tiny creeks whisper of the cooling draughts they will give to mind as well as body. The gentle zephyrs kiss one's face and lips and hands as in tenderest caress, and the skin the fierce desert sun and winds have tanned and scorched is soothed and refreshed. Yet it is not all external, what the oasis gives. The heart beats easier, the pulses are less strong and masterful, the nerves are more under control, and the inward fever of body and brain seems quenched almost as soon as one reclines under the shade of the oasis. And then, penetrating farther, mind and soul are soothed and quieted, and one is able to see how to use the added strength and rugged power he has absorbed from the rude and uncouth, but loving and generous bosom of the desert mother.

CHAPTER XXXIV

A Pasear from the Garden of Eden by way of Morongo Pass and Twenty-Nine Palms to Indio

SITTING on the porch of the little white house in the Garden of Eden one obtains an expansive view of the desert. Out of its dark gray rises one of the big sand-dunes shining rosy in the sunlight, while, four miles away, the oasis of Palm Springs lies, a living green garden amidst the dull color of the wide vastness. Beyond, the horizon is bounded by the faint blue line of the San Bernardino range. To the right and left the descending spurs of the Sierra San Jacinto form the frames of this incomparable picture. Storm clouds float down from the west through the San Gorgonio Pass, dividing themselves into somber armies, flanking off to the north over the far-off hills, and to the right over the San Jacinto range, quickly covering and hiding it from sight.

It is on a morning like this that we start out, with our three burros, for Palm Springs and beyond. Those who see the desert

Garden of Eden

in the summer and fall, or even in the winter, can scarcely believe that the dry, sandy watercourses which cross the roads over which we travel have ever been moistened by water. But let them come at such a time as this. The clouds on the mountains have given forth their burden of rain and now these once dry

"washes" are full of whirling, swirling, roaring waters that have poured out from the canyons and are now on their way into the desert. There are no bridges, so the only way to cross them is to boldly plunge in, after seeing that the burros have crossed. They hesitate before risking it, as their burdens are a little heavy, but, as they stand deliberating on the edge, we give them a deciding push, and, once in, they are soon across. Sometimes incantations are needed, however, to persuade them to cross a particularly noisy stream. We objurgate, and use a variety of picturesque language, as well as perform mysterious movements with divers and sundry sticks. Once or twice they and their packs slip almost out of sight, but fortune favors us and we get over all the streams without anything more serious than a thorough wetting, several times repeated.

Indian ollas

In front of the store at Palm Springs we find quite a caravan of canvas-covered wagons,—prairie schooners of a modern type. It is a band of emigrants coming from arid Arizona to the north country,—Oregon or Washington,—where water is plentiful. Their horses are of fine working strain, and their wagons new and well equipped. There are twenty-one persons in the party, one whole family, from grandfather to babies, and all cheerful, happy, and hopeful. Will they ever grow homesick for the blue sky and the purple mountains of sunny Arizona, "the country that God forgot," as Frances Charles has it? "We know the way back, if we want

The Toutain ranch, Whitewater Canyon

to return!" smilingly answers one of the younger men in answer to our query. To them, here, the word "desert" seems a misnomer. "Desert?" cries one of them, "why we've been having rain half the time since we left Yuma." We also can foretell what they will have to meet when they cross the wash of the Whitewater, swollen by these heavy rains.

The Morongo Pass

We ourselves have to face the flooded wash, and our roads are cut across by the dozen or more of "wild" streams that have overflowed the banks and are seeking to escape in every direction. Yet it is not a disagreeable experience. We have had so much heat, and dry sand to travel over for the past months that this flooded condition comes with the exhilarating excitement of change. So long as we feel there is no danger we rather enjoy the fun of having to urge on our reluctant burros. The rain has clarified the atmosphere and put a "champagney" quality into it, and we walk along, splashing through the water where it courses along in the road-bed, with a "don't care" vim that would be the envy of a city street arab.

Old gold wheel

It is a good thing we don't have to camp out on a flooded road, though, as we have had to do in past experiences. The Whitewater ranch-house is before us, a picturesque old adobe, shaded by aged and gnarled cottonwood trees. It is an historic building, for it was once an important station on the overland stage line. Here the travelers coming west over the desert in the hot days of summer got their first whiffs of sea-breeze, rushing in from the

Pacific over the San Gorgonio Pass. How they longed — when deep down in the desert bowl and exposed to the fierce heat of the noonday sun, which beat down with uncontrolled fury, and beat up with as great intensity from the barren sands and salt-covered plains — to reach this delicious oasis, drink its cool, pure, and refreshing waters, disrobe and bathe all over in it. What luxury, what joy, — plenty of water!

Yes, and the old building has tragic memories as well, for it is boldly whispered that the early dwellers in this whitewashed adobe felt no qualms of conscience at "potting a few inoffensive Indians," merely to keep themselves in practice. A cave, also, has been discovered, not far away, where a few desperadoes lived

The Devil's Garden

who did not hesitate to relieve prosperous miners of their surplus gold-dust.

Though there seems always to be green pasturage at the Whitewater ranch, there is not always plenty of water. We are told that the water is all "ditched" from the Whitewater River, some two to three miles east. Even now the floods have so silted up this ditch that all the drinking water is hauled in barrels from the river and the stock is watered at a "sump" hole in the pasture.

Here we are favored by "rubbing up" against several old prospectors. They come and look at our burros, and, as we take off the packs, comment on the way we have tied them on. One undertakes to show us a new way of "throwing the diamond hitch," another "the squaw hitch," and still another "the figure four hitch." Then when we tell them who we are they laugh each other to scorn and cry, "Sold again!" They took us for "tenderfeet."

Two main desert roads lead from the Whitewater ranch into the desert, — we have just come over the one, we are about to take the other. It strikes off somewhat to the north on to an extended mesa into the Morongo Pass, the connecting link, at this point, between the Mohave and Colorado Deserts. Through this pass the Yumas and Chemehuevis used to come on their visits to the Coahuillas and Serranos of the desert and the San Bernardino Mountains. Afterwards the gold-hunting adventurers and trappers found it a convenient pass. It is also said the Spanish missionaries came this way and left a trace of their presence in the Mission Creek Valley through which we are now passing before we strike the mesa. They taught the Indians how to plant and care for the vine. Then the white man came and drove the Indian out (as he had no legal title) and built an adobe house. Things seemed to thrive and the small lake of water caused by the rains appeared to have become a permanent thing. It struck the fancy of some one and he offered a good price for it, which was taken. Then an earthquake came and made a gash through which all the water escaped. It ruined the valley for the white man and so now a paternal government has handed it over as an Indian reservation.

We unpack the burros by the roadside for an hour's rest at noon and sit down on the rocks to enjoy the wondrous view spread out before us. We have seen it from every possible angle, this desert and its mountain framework, yet it is never less beautiful, never less impressive than it was at first.

When we find ourselves on the mesa we begin to understand why this is called by the prospectors "the devil's garden." It is simply a vast, native, forcing ground for a thousand varieties of cactus. They thrive here as if specially guarded. Here are the tiny *Mamillaria*, hidden where one must hunt for them, and close by various *Opuntias* and *Echinocactus*, especially the large *E. Le Contei*, the largest of them all, the "barrel-cactus," which reminds us somewhat of the giant *Sahuaro*, a few of which I have found on this desert on the California side of the Colorado River. Some of these Echinocactuses are ball-shaped and the local parlance names them "nigger heads." Delightfully interspersed with these various cactuses are flowering creosote

bushes, the whole forming a singularly strange and grotesque piece of landscape gardening. As far as I know it is unique in the United States. On the Mohave Desert, near Hesperia and elsewhere, there are a large number of the *Yucca arborescens*, — the so-called tree yucca, — and near Tucson are thousands of *Sahuaro*, but I know of no place where so many varieties are to be found as in this small area near the Morongo Pass.

It does not take us long to reach the pass, and we find ourselves at one thousand eight hundred feet above sea-level nearly two thousand feet below the San Gorgonio Pass. The shade offered by mountain and brush is tempting to us as well as to our burros, but there is no time for rest now, as pasture and water are offered to us at Chuck Warren's, whose ranch-house reposes in the shelter of some fine old cottonwood trees on the

Entering the Morongo Pass

other side of the valley. He sees us coming and at the watering-trough greets us in his hearty, sincere, pioneer fashion. Bluff, hale, and strong, and with a face that always breaks out into a genial smile at the presence of a friend, at seventy-three he is as healthy and vigorous as a young oak. He got his name from the fact that in the early days he was a teamster on the Chuckwalla trail. So "Chuck" he was called, and Chuck he is from one end of the desert to the other. If he has any other "Christian" name no one knows it or ever thinks of using it, and it is now hallowed, not only by long usage, but by the affection with which his friends speak it. With his wife, his sturdy sons and daughter, he lives his simple life, raising cattle and by irrigation making two blades of grass grow where none grew before. He is taking what he calls a well-earned rest (though

he works twelve and fourteen hours a day) after the hardships of his teamster days.

We stop at the hospitable ranch, unpacking and unsaddling our burros so that they may revel in the rich pasture while we chat with the jolly old man. What a thing it is to live to seventy-three years of age and be as light-hearted and full of fun as a boy!

About nine miles from the ranch is a little outpost where he first settled and that now bears the name Chuck Warren's Well. A cabin, corral, and windmill are always at the disposal of the passing traveler. On a hill not far away is Chuck's "slaughter-house." Here, after the cowboy has picked out and "roped" his "beef," he brings it and it is not many minutes before "beef on the hoof" is converted into beef for the kitchen.

Butchering appliances

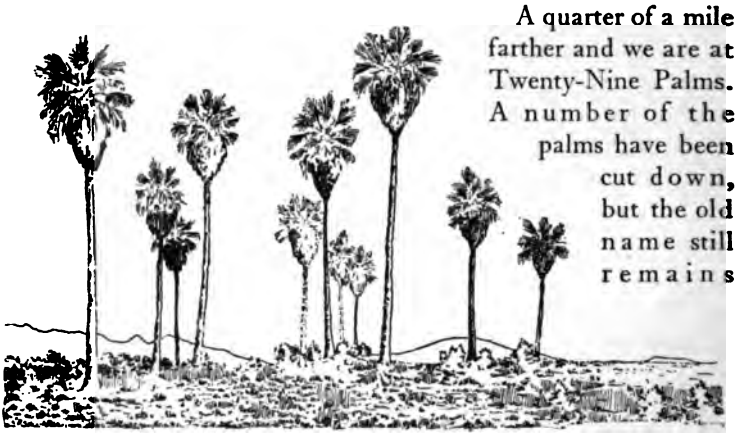
We leave Chuck's place with regret, but we take his hearty hospitality along with us. The road beyond the well is most interesting and by and by we are in a grove of the tree yucca, the *Y. aborescens* or *mohavensis*, which adds its weird and picturesque characteristics to an already peculiar piece of desert. A wide expanse opens up before us, losing itself in the far distance in several rows of sand-hills, bordered by blue lines of mountains which belong to the Mohave Desert. We are now on the border line, though there is no natural or artificially named boundary.

To our right a road leads off to the "Lost Horse Mine." The valleys between those ragged hills over there are scooped out and form reservoirs for water, and should the traveler find them dried out, all he needs to do it to dig down in the sand and he is sure to find water. Such wells are called "coyote holes" by the desert prospector.

It is a long, wearisome journey from Chuck Warren's Well to Twenty-Nine Palms, over twenty-two miles of sandy road,

and we welcome the sight of the long, slender stems clothed with their mysterious crown of rich, dark-green leaves that denote the end of our day's tramp. Before we come to them, however, we stop for a short time at Captain Jim's *kan* and chat with the old Indian and his squaw. Here they live a solitary life, contented and happy, for their needs are well provided for by the little garden, the cattle he owns and the natural gifts of the desert, such as the fruit of the prickly pear, pinion nuts, *chia* seeds, and the like. He was born here and has seen his native place occupied in turn by white men and Mexicans.

A quarter of a mile farther and we are at Twenty-Nine Palms. A number of the palms have been cut down, but the old name still remains



At Twenty-Nine Palms

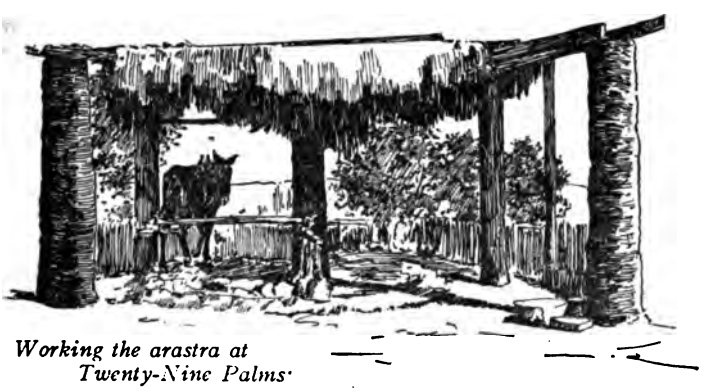
and doubtless will, even though every palm disappear. It seems almost a crime to cut down these marvelous scions of the desert. They have stood here for centuries, and, like the giant trees of the Big Basin, should be preserved for the generations of the future. Twenty-Nine Palms is the home of "Charley" Wilson, another well-known prospector and miner, who has had varying fortunes from poverty to affluence in his long desert life.

Mr. Wilson takes us out to show us an old Mexican *arrastra*, a primitive ore-crushing machine and mineral-separating mill. Only a part of it remains, but this clearly shows how the simple contrivance did its work. Fastened with chains to cross-beams are heavy flat rocks. The beams are attached to an upright which is made to revolve by mule power. As the rocks revolve,

dragging on the ore beneath, it is crushed and milled. The floor of the pit is grooved, and when the mill is in operation, mercury is put into the grooves to catch the gold or silver as the grinding progresses. Each week, or each month, as judgment dictates, a "clean up" takes place, when the grooves are emptied of their contents (the mixture of mercury and precious metal being called amalgam), which are put into a retort, and separated, the mercury being used again in the mill.

Wilson's house

The next morning as we pack the burros Captain Jim appears and his pleasing voice inquires, "You go away?" Before we



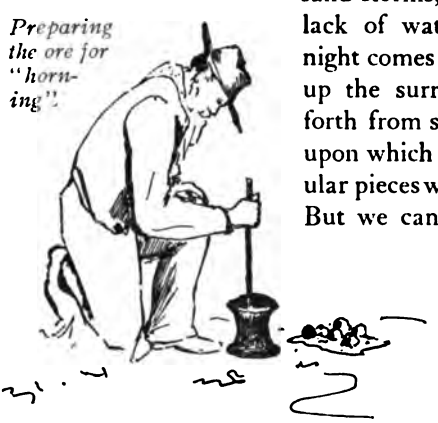
Working the arastra at Twenty-Nine Palms

go he tells us of the days that he well remembers when antelope, deer, and mountain-sheep abounded in this valley, and when, also, there were plenty of Indians. "But now," said he, "they are all gone," and he makes an expressive gesture with both

hands and arms, signifying that they are scattered, never to return. Yet, though we belong to the race which has done his race so much injury, he shakes hands with us and bids us "Come again" with a heartiness that betokens its simple sincerity.

Eight miles of travel brings us to Gold Park, a number of mining claims belonging to Los Angeles capitalists. The camp is in care of a Mr. Sullivan, who on our arrival informs us that he is anxiously awaiting the coming of the wagons which are to bring men for the mine, provisions, and other needed supplies. As his disappointment seems to add to his loneliness we respond to his hearty invitation to "unpack," by taking off the packs from the burros and making ourselves at home for the night. For fifteen years he has wandered over the desert, prospecting and mining, and many a tale he tells us of hair-raising experiences with Indians and wild beasts, and the natural horrors and terrors of the desert,—sand-storms, floods, fierce winter winds, lack of water, and the like. When night comes and our pleasant fire lights up the surrounding gloom he brings forth from some hidden recess a violin, upon which he plays a number of popular pieces with both skill and precision. But we can see he is uncomfortable. Is it the absence of the men? No! Short of provisions? No! Well, what is it? Then the confession comes. He is out of tobacco, and he notices that the smoker of our party has scraped every last grain out of his tobacco sack, so that he knows *he* is also "out," and he is just "dying" for a smoke. So early next morning he decides to walk on with us to El Do-

"Horning" for gold



Preparing the ore for "horning"

rado, eight miles away, where brother miners will relieve his craving. We climb many a hill and pass many a "prospect hole," so that the white tents of El Dorado are a welcome sight. The superintendent, Mr. W. Brydon, kindly invites us to lunch and then shows us around the camp. Touching upon the subject of reptiles, he assures us that his men have killed thirty rattlesnakes during the last two months. There are also a large number of chuckwallas, as well as the ordinary varieties of smaller lizards, in the region.

El Dorado is one of the discoveries of Charley Wilson and is now owned by the El Dorado Consolidated Mining Co., of Los Angeles, California. Not far away is the scene of a desert tragedy. It has often been said that many of the mines of Arizona are marked with the brand of Cain, for there are few that have not witnessed the murderous shedding of human blood. While this is not true of the mines of the desert, there are some that bear the homicidal curse. This particular claim is called "Dead-man's Hole." Two miners owned it in joint partnership and for a while all went well. Then one grew suspicious of the other and accused him of selling ore on the sly. When the quarrel was known other miners interfered and took sides, and it ended in a shooting affray in which two men, a father and his son, were slain.

As we leave El Dorado Camp we carry away the impression that erelong this mining district will be heard from. The indications are very favorable and if they hold out, good mines are sure to result.

Dark clouds are gathering over the mountains and for a while it seems as if we shall be drenched, but the skies clear again ere we reach a little rock-house and tent four miles from El Dorado. It belongs to the Hersey Mine, and a little well of water, with a slight sulphurous taste, explains the location of the house.

A wearisome afternoon's walk is ahead of us through a long valley, where the road reaches on and on apparently without end. After tramping until after sunset we find it makes a swerve to the south and enters a canyon. Before we leave the valley we turn around and are enchanted with a group of rocks sharply outlined against the evening sky, appearing more like a row of

imposing castles crowning a high mesa than natural objects out in the desert. As we turn again the supposititious castles disappear, but shortly afterward a pleasing reality takes their place in the form of the Pinion Camp, the place we have decided upon for our night's stopping place. There are a few cabins and a stamp mill situated in a cozy nook in the mountains, and — pleasing fact — the homes of families, where the voices of women and children are heard.

The next morning we pass down an unnamed canyon, green with trees, shrubs, and flowers. The pinion grows here side by side with the yucca and cedar, and with the flowers it seems incongruous to call this a desert country. Now everything is green and beautiful. The profuse rains have made them so. But soon, when the moisture is gone, all save a few hardy plants

Pinnacles at entrance of Pinion Canyon

and trees will disappear, and one passing through then could scarcely realize that it was the place he had seen as we see it now.

Gradually, however, a change takes place. The green vanishes, the trees grow scarcer and even the yuccas become few and far between, and we find ourselves in a canyon deeply cut out by floods and strewn with water-washed rocks and deep sand. Bleak mountain walls frown down upon us and they seem to soar upward and reach out forever. With every turn we hope to catch a glimpse of the desert, but we are regularly disappointed. A boarded well appears, but we do not stop for water, as we know we must be approaching Indio. When travelers come to this well in the opposite direction it is completely hidden by a large rock, into which Nature has carved recesses which serve as a cupboard for rough-and-ready camp cooking utensils.

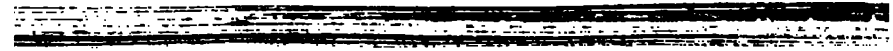
How welcome the sudden apparition of the well must be to weary and thirsty travelers from Indio who come over this road for the first time!

At last we reach the open, but there is another mountain range ahead of us through which we must pass ere we can see Indio, so at a convenient spot we stop and unpack and eat lunch. The burros evidently share our longing to take a nap, even though there is scant shade in the lee of the small bush where we sit, but we must press on. They are very unwilling to rise and resume their packs. They are evidently tired out, but we push steadily on, and by the middle of the afternoon reach the brow of our last hill. Again the desert is before us, made green for miles by thousands of mesquites. Yonder is Indio, sheltered in a bower of cottonwoods, and with the tufts of the palms showing here and there in tropical beauty. Another hour and our burros are feeding on good grass close to the old adobe schoolhouse and we are again in the land of railways and the bustle of men.

Old arastra at Twenty-Nine Palms

Photo, by George Wharton James

THE ALAMO RIVER CONVEYING THE OVERFLOW WATER OF THE COLORADO TO THE SALTON SEA, APPROACHING SHARPS



CHAPTER XXXV

From Yuma, down the Overflow of the Colorado to the Salton Sea

N the following chapter I will describe the Salton Sea, its origin, present state, and the efforts made to shut off the flow of the Colorado River into it. On Thursday, March 8, 1906, I started with several companions to fully explore the flow of the Colorado River and to follow it whithersoever it went until it finally emptied in the Salton Sea. Our explorations led us down the Alamo River, a trip that had never before been taken. Yet it was not the first trip ever made down the overflow of the Colorado River to the Salton Sea. When the uprise of the Salton occurred in 1891, the *San Francisco Examiner* empowered Mr. H. W. Patton, then editor of the *Banning Herald*, to take a boat at Yuma and follow the overflow to the Salton Sea. He did so, guided by Mr. J. E. Carter, one of the best-posted white men familiar with the Colorado River below Yuma. They, however, went by the New River and reached Salton after an exciting and adventurous trip. Owing to Mr. Patton's haste to reach the nearest railway and telegraph station a rather amusing report of his arrival was sent out. His boat reached a point some miles below the station of Salton, so he left it and persuaded the foreman of a railway gang to allow him to ride to the station on the pump-car. The wag at the telegraph office at once reported to rival papers in San Francisco that Mr. Harry Patton, who was sent by the *Examiner* to go by boat from Yuma to the Salton Sea, "*had just arrived at Salton on a hand-car.*"

We arrived at the railway on foot after our journey, having had to walk eighteen miles and ford several sloughs to get there. The whole story I will now recount.

Purchasing two boats at Yuma, one a flat-bottomed ordinary gig, stoutly built, with six oars, and the other a mere tub or light scow, with flat bottom and stub nose, such as miners and prospectors have made to float down the Colorado River, our party of six whites left "the city of torrid heat." There were Brown (partner of Burton Holmes, the well-known lecturer), Gripton, of New York; Van Anderson, of New York; Judson, dean of Fine Arts department of University of Southern California; Lea, missionary to the Yumas; and myself, whom the boys in fun called "Commodore."

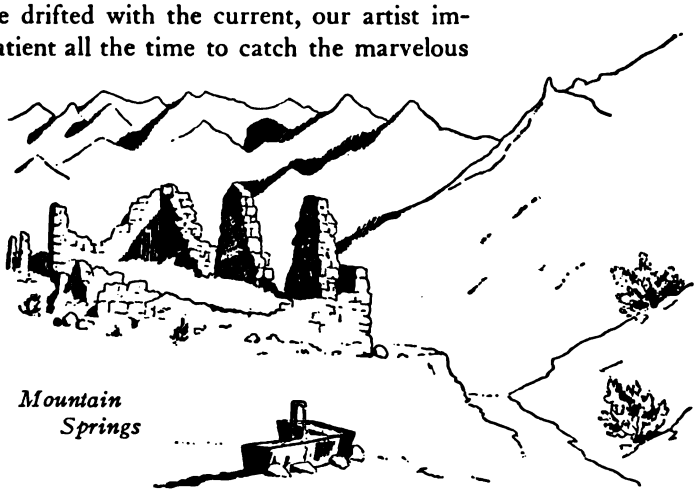
We had been warned of the dangers and difficulties we were sure to encounter. There were some ten miles where the wild river ran through a mesquite forest, through which we should have to cut, push, force our way. One of the men who had tried, failed and returned. Then, if we succeeded in getting through the mesquite and reached Sharps — the point in Mexico where the waters are taken and distributed through head-gates into the irrigating canals of the Imperial country — we should have some fifty miles of the Alamo River to run which had never before been done. The difference in level between the water at Sharps and at the Salton Sea is nearly three hundred feet, and a fall of three hundred feet in fifty miles surely meant rapids galore; indeed we were warned that we should make the "fifty miles in fifty minutes." Then the engineers assured us that the force of the flood had so scoured out the channel that the banks, from being mere ridges, were now high walls thirty, forty, fifty and more feet high, and one great danger to be apprehended and guarded against was the fact that the rapid flow of the stream was constantly undermining certain portions of these banks and they fell into the stream in such vast quantity that they would destroy or sink any boat unfortunate enough to be under them.

On the Alamo River

This was a serious enough danger as we afterwards learned when we saw thousands of tons of earth fall, sending up great waves which came near swamping our boats.

Certain custom-house officers whom we met assured us that we should all be good ship-carpenters before our trip was concluded, and another desert humorist warned us to be ready with an axe so that when snags came through the bottom of our boats we could cut them off. Then, said he, "You'll have enough from what you've cut off to use as fire-wood."

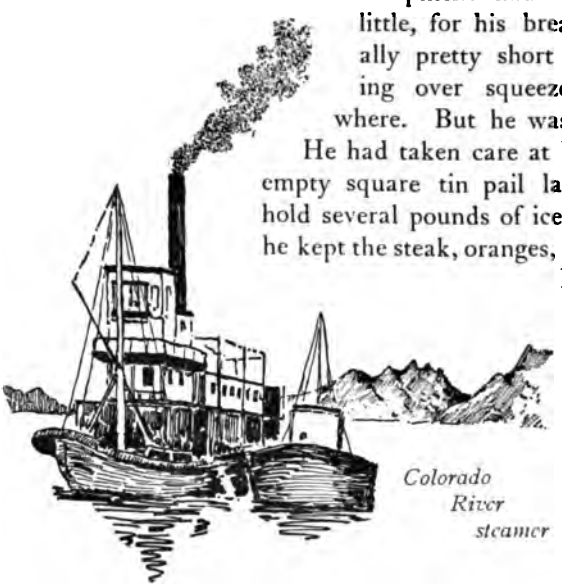
We were a jolly party when we set out from Yuma. Easily we drifted with the current, our artist impatient all the time to catch the marvelous



colors that seemed to be produced that evening for his especial delectation. I shall never forget his delight when I pulled inshore and called out, "Camp for the night." Forgetful of everything he jumped out, and came near being swallowed up in the quicksand, for here there is little or no clay to make wet parts of the banks secure. Without waiting, however, to cleanse himself from the mud, he fixed his easel and in a few moments was oblivious to the world, the flesh, and the devil in the revelry of color the sunset was giving him.

Brownie was quite a chef. It is not often that the business manager for an eminent lecturer can throw aside his dignity and tie on big boots, throw on a sombrero and wear a flannel

shirt, and cook over a camp-fire for eight hungry vandals. Yet that was what Brownie did to perfection. He is a great singer also, and in the development of his chest has done wonders. But, while cooking, it always seemed to me that his chest development had slipped down a little, for his breath was generally pretty short as if the stooping over squeezed him somewhere. But he was a good cook. He had taken care at Yuma to get an empty square tin pail large enough to hold several pounds of ice, and upon this he kept the steak, oranges, and grape fruit. Imagine having grape fruit for breakfast on a camping-out trip. Sleeping out of doors is great fun in a dry, healthy country, and to see the eight of us early that morning rolled up on the sand with nothing but our heads sticking out was enough to tempt one of us to fire off a gun. It scared the boys nearly out of their wits, but they were soon up and ready for breakfast.



Colorado River steamer

By noon we were examining the work being done for the permanent head-gate, a magnificent reinforced concrete structure that is to receive the main supply of water for the Imperial region.

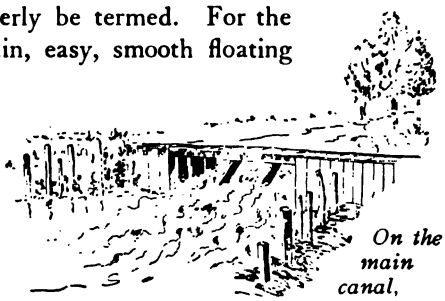
Later in the day we came to the scene of the desperate efforts — six in number — made to control the unexpected flood of the Colorado, already described.

A mile or so below this point we reached the busy and bustling camp of the lower intake, with store, bakery, large dining-tents, doctor's office, steam-engines, pile-drivers, centrifugal suc-

tion-pumps, electric-light plants, all revealing the great activity and determined pressure of the work. All the men that could possibly be used were working day and night on the construction of the Rockwood head-gate.

Here our Indians joined us for the main part of the trip. Talk about Indians being fools! They were both keen, observing, wide-awake, daring, serene in the face of danger, self-contained and hard working. There's many a white man who would look down on these "savages" who could not begin to compare with them in intelligence and practical usefulness.

Leaving the lower intake in three boats with six whites and these two Indians we started down the Alamo—as the canal should properly be termed. For the first ten miles it was plain, easy, smooth floating on the bosom of a great river, for, as I have shown, all the water of the Colorado was pouring through the "temporary cut" into it. The great volume had widened and deepened the channel until now it was no longer a "canal," but a mighty river, nearly 1,000 feet across.



On the main canal, Imperial Valley

At the end of this ten miles our troubles began. As we had been warned, we found the river had left its bed and overflowed the country in every direction, in all of which was a mesquite forest. The mesquite, for all practical purposes where man is concerned, should be called the *mescratch*, for its thorns are large, sharp, and penetrating. As the diminished current bore us on we ran end on, stern on, sidewise, anyhow into these mesquite thorns. I was in the front boat, in he bow, seeking the way. As the stream divided and subdivided it required speedy observation to tell which was the larger cur ent and follow it, and Jim and I were kept very busy. There was no time given for decision, for we were borne on into one of the waiting trees, ready to pierce us from "stem to stern" with its poisonous thorns. I learned to "take" them head on as a

goat takes its foes. Pulling my broad-brimmed sombrero over my ears, lifting up my coat collar, and lowering my head I "butted in." But the fun came when we stuck there. Fun? Oh, it was great, to find yourself lodged in the heart of the branches of a mesquite, the thorns making fresh punctures in your tires at every movement, and the uneasy current beneath swaying and swinging you to and fro! Many a time we had to resort to machete, hatchet, or axe and literally chop our way through. Then, as the many divisions and diversions of the current reduced the flow of water, we ran on to sand-bars in these mesquites and for hours at a time had to wade in the water, up to our middles, often sinking in the quicksands up to our knees and higher, lifting, pushing, pulling, straining to get our boats along while the mesquite thorns got in their work.

And the *joy* of it was increased as night came on. We were still in the thick of it. No place to camp. Not a sign of dry bank anywhere. There was nothing for it but to stop in the first break big enough for three boats to be tied side by side, for misery loves and needs company, and eating our cold supper, scratched from top to toe, wet through, muddy, bedraggled, and wretched in appearance, our "joy" was added to by a heavy downpour of rain. Physically we were so miserable that it made us laugh.

Where were we to sleep?

Nowhere but in the boats. Now it cannot be conceded that the slats at the bottom of a boat are at all conducive to sleep, especially when the slats are wet and very muddy. With evident shrinking these scions of noble houses stretched out their blankets. Brownie and Lea took the scow, the two Indians the bow of the big boat, Grippie the wide stern-seat, to which he built an extension for his feet, and Van on the slats below, while I had the other small boat to myself.

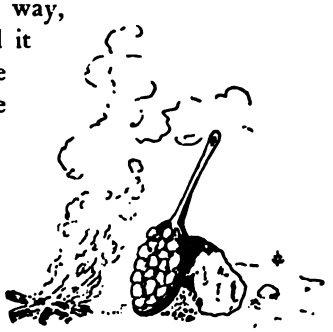
My! how it did pour, and I guess those boats leaked extra on purpose. Wet through, I awoke to find Van wringing out his blankets, and at another time to hear Grippie laughing as if he would burst. "What's up?" I asked, to which he gave the intelligible response, "I'm laughing because I'm so miserable."

In the morning the parson looked as if he'd been "bucking the tiger" all night, and Brownie had the same appearance as when

the box office "returns" show a deficit. Grippie laughed some more, which denoted the depth of wretchedness and despair into which he had sunk.

No hot coffee! no hot steak! no steaming fried onions! no hot anything, except a hot temper. But we had vowed we would "grin and bear" whatever came along, so with "brave hearts and dauntless spirits" we swallowed a cold biscuit and started on.

It was four times worse that morning than it had been the preceding day. Hour after hour we toiled along, up to the waist in water, chopping, cutting, pushing, pulling, and getting scratched. Mainly the latter. Several times we had to cut down mesquite trees that completely blocked our way, and I never knew before how hard it was to cut down a tree below the water line. For, of course, if the stump was left high enough to prevent our boats going over them we might as well have left the trees standing.



The desert traveler's way of making biscuits

Hour after hour it kept up, until at last peace reigned within, for we were back again in the main current and channel. The contour of the country here is such that, while a small part of the water had escaped and flowed off by way of the Rio Padrones, the larger amount converges and reënters the banks of the Alamo at a point called Seven Wells. As soon as we could we camped, spread out our bedding to dry, while Brownie made sweet music with steak, onions, potatoes, and corn on the frying-pan and stew-kettles.

That night in camp on the Alamo we uneasily tossed on our blankets, for all of us had a number of thorns deep seated in various and many parts of our systems. While the thorns in our bodies made our sleep that night somewhat disturbed, it was a great improvement upon the night we spent in the boats.

The following day we had reasonably good rowing, though the wind arose and blew dead against us for several miles. But with a fair current in our favor we were able to make headway. We

passed hundreds of thousands of aquatic birds, which nest and live here in almost perfect seclusion. Hardly a soul in a year passes them, so that they are almost as tame as domestic fowl. We rowed our boats again and again to within fifty feet of great solemn blue herons, standing overlooking the places where fish were likely to be caught. In one place we found a heronry where fully a thousand nests could be counted.

Now and again a sea-gull would follow us, just as the gulls do the steamers that cross San Francisco Bay, as if eager for us to give them something, and one could not help questioning whether these birds had ever had the training of the bay, or were wild birds with a natural instinct to follow anything which seemed to suggest the possibility of food.

A boating paradise near Calexico

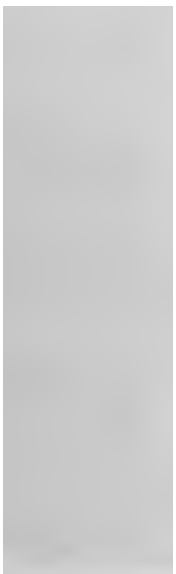
But by far the most beautiful of all the bird sights we saw was the recurrence of flocks of pelicans, soaring far up in the sky. Hundreds and possibly thousands of these birds were flocked together, and apparently soaring without purpose at a distance of perhaps a mile from us. Up and down, back and forth, whirling and circling, doubling and countering, rising and falling, they moved, their white wings glistening and brightening in the sun while at one angle, and the next, the black tips giving forth an entirely different effect. It was as if flocks of sunshine and shadow, light and darkness, were playing at hide-and-seek in the sky. For hours we saw these moving flocks, and at each fresh sight they seemed to possess a new grace and beauty.

We found eagles' nests quite common, and in several cases one of the party climbed up to the nests. We brought away two eggs only, to determine the species of the eagle, as we did in the case of several other birds, such as owls, hawks, and a bird the Indian called a squawk, in onomatopœic representation of its cry.

That afternoon we reached Sharps, the point in Mexico where the waters of the river are taken and diverted into the canals of

Photo, by George Wharton James

ON THE ALAMO, TWO DAYS FROM THE SALTON SEA



the Imperial region. Leaving one of our boats here, we were soon gliding easily along down the strong current. There was a trifle of nervousness at first, lest we get too far apart, and one or the other of us get into trouble, so the order was, "Keep close together, and listen for each other's signals." Our first rapid gave us quite a little thrill. It was nothing very great or dangerous, but to hear the roar and rush, and swish and dash of the water, and to see the rising and falling, the spray and spume, and the marked descent of the whole river for fifty feet or more, led us to wonder if we'd get through all right. Indian Jim at the oars and I with the steering oar, we sent our boat right into the heart of it, and in a moment we were rising and falling, tossing and bouncing, from one wave to another. We shipped a little water, but not enough to scare us, so it was with bolder hearts we ran the next and the next.

Soon the lookout called, "Two water-tanks ahead," and when we all arose to see, there loomed before us on the right the tanks of the power house at Holtville. We tied up here, for three of our party, Brownie, Gripton, and Lea, had to leave us, and Indian Joe went with them. They took team for Imperial, while Van Anderson, Indian Jim, and I were left to run the rapids alone.

The question arose in my mind: Shall we go in two boats or one? The square-nosed scow had served us so well I hated to part with it, so, without consulting the others, I decided to handle it myself. We started, and almost immediately ran into a "nasty" place. The railway bridge crosses the Alamo a short distance from where we were camped. It rests upon piles which stand obliquely to the course of the river. The result was that my boat was swept down and struck the piles, swerved into a snag with a lot of branches which had caught in nearly the same spot, and came near upsetting. There I was, held fast by the force of the current, and imprisoned in the arms of the snag. It took quite a time of pulling, pushing, and cutting before I got loose. Then on we went again.

That was the beginning of the real fun of the trip. That afternoon and the next day we must have run over fifty rapids, some short, some long, some rough and dangerous, but most of them just exhilarating and exciting. How one's blood tingled with the dash and roar, the speed and the tossing, and how one's hands,

wrists, and arms had to work to keep the boat safe while in the middle of the rapids! We had no great rocks to contend with, but something equally dangerous. The rapids were filled with heavy masses of "nigger-head" clay, and once or twice I got ugly bumps on these "heads" that shook the boat from end to end and nearly toppled me head over heels.

In several places the river widened out for half a mile or even a mile and the flats were covered with ducks, geese, and pelicans. I think I saw more of these aquatic birds in these two or three days than I had seen in the whole of my previous life. In some cases we were allowed to come as near to them as fifty feet, and with a gun an expert shot could have had his choice out of the thousands.

Cameron Lake before the 1906 flood

And now we experienced the reality of one of the dangers against which we had been warned and that I had all along foreseen. The boats were about fifty feet apart. We were in the radius of a great curve. The mad river was here boring under the bank, which was fully forty feet high. No one who has not seen the cutting, or literally the auger-like boring power of this river in such places can believe the extent of its work. It cut in deeply, and removed the entire foundation of the bank for ten, fifteen, even twenty feet. Then, without a premonitory warning, the whole bank, for fifteen or twenty feet back, dropped with a terrific splash into the river. And it fell off as if cut with some gigantic machine, almost as straight as the cutter slices a bar of soap. Both boats were almost swamped by the great waves that ensued, but fortunately neither of us was immediately

under the bank, or this account would have had a more somber ending.

That night we camped at the deserted shack of a settler who had "taken up" a homestead. We saw many pathetic evidences of a woman's presence in the rude and simple efforts to care for a woman's comfort. Just before the shack, the rapids dashed on to the sea. Early in the morning we started and for an hour had hard rowing. The banks were all gone. There was nothing but flats over which the river distributed itself, making it very hard to find the main current. The wind began to blow and ere-long a perfect gale made waves which added to our difficulties. Soon I was completely stranded. I had been aground several times before, but this was permanent. The wind was blowing furiously and my companions could not hear my shouts, but fortunately one of them saw my predicament and they ran ashore and waited. There was but one thing to do. That was for me to go to them. Jumping into the water, and sinking up almost to the middle in quicksands, I struggled against the wind to reach them. Each time I pulled myself out of the treacherous sand the wind blew me back, and for a while I despaired of making headway. But keeping desperately at it I succeeded at last in reaching their boat, where I fell over breathless, speechless, and exhausted. When I was able to move we all jumped out into the water and lifted and pushed the boat back to where the other boat was stranded. There we took out everything of value, and said our final farewell to it.

But our difficulties were not over. Though the three of us handled the oars, the six of them made so little headway that two hours' rowing advanced us not more than half a mile. By this time the waves were running high and furious, and Jim, the Indian, got scared. He cried out: "I no like this river. Pretty soon we tip over and this boat he sink. We no get there."

"Are you scared, Jim?" I asked.

"No!" he responded quickly, "I no scared, but I no like 'em this river."

Each time we got into the trough we shipped so much water that finally I decided to abandon the attempt to cross the sea. Giving the order, we turned stern to the wind and soon rowed

over the flats, the water having been blown over them to a depth of several inches with the wind, and ran ashore opposite a large volcanic butte that stood out in the heart of the desert.

We anchored the boat as well as we could and then proceeded to carry everything from the boat to the butte, where, pretty well above the then level of the sea, we piled them up, covered them with our bed-canvas and tied them down to the anchoring rocks.

Then we started, each heavily laden with cameras, canteens, and food, for the nearest point on the railway. The effloresc ing salts made a yielding crust on the alkali soil in which we sank over the ankles at every step. One of my ankles was soon cut through and I suffered intensely. To add to our difficulties we soon came to the brink of a wide slough, far too deep for us to ford, and it was impossible to swim across heavy laden as we were. There was no other course than to go around it, and this added several weary miles to our tramp. At length, after full eighteen miles of a walk, wearied out but glad at the accomplishment of our trip, we reached Imperial Junction, from which point Indian Jim and I went to Yuma, while Van Anderson remained there all night, taking the morning train for Mecca.

Some ten days later we decided to return to the cache and obtain our bedding, camera, supplies, etc. If we found the boat we were to row to some point nearer to the railroad, so that we should not have so difficult a task to carry our heavy outfit. To avoid the eighteen-mile walk I determined to leave from a nearer station and ford or swim whatever sloughs we came to. It was hot and blinding when we started and mirages were on every hand. When we reached the first slough, as it did not appear very deep, I waded right in. It took me up to the middle. Soon we passed the mud volcanoes, fully described in their own chapter.

From here we walked and crossed four more sloughs and at last reached a wide one which we could not ford. So I decided I would try to swim across several times and carry our clothes and the pack, in which was our provisions, on my head. I took over my own clothes all right, though it was a top-heavy affair as I had nothing but string to tie the pack on with. I did not do so well with Van's, for just as I got into the middle of the stream the

awkward bundle made a lurch forward; I had to grab it and was partially ducked and so was the pack, but I succeeded in getting it across. For the third pack I took part of our provisions, my wallet, etc., and wrapped them up. It was a heavier pack than any of the others, and as I stepped down into the deep water I went into a hole, over my head in water. I started to swim and got part of the way across when my load lurched and over it toppled. It was all I could do to hold it in one hand and swim with the other, and I was pretty well exhausted when I got to the other side. I was also nervously exhausted, for I had been writing for the past three nights and had not had more than three hours' sleep in each twenty-four hours. The cold water and wind were chilling me through so that I was used up. We decided, therefore, to leave the rest of our goods on the other side, go on to the cache, get our things and the boat (if fortune favored us that much) and row back that night and camp where we had left the pack. Another slough, deep but fordable, though up to the breast, gave us a thorough wetting. But we were rejoiced finally at the sight of our cache. The rain had done a little damage and two mice had made nests in our oatmeal package. All other things were practically in good order. In the distance the boat moved to and fro on the water. Careful estimate showed a rise of about nine inches since we were there. It was hard work packing our oars, bedding, camera, and supplies back to the boat over the soft yielding soil of the flats near the sea. At last it was done. It was nearly sunset. The sun had quite gone before we reached the mouth of the slough, but we made camp, and, all wet

Resting on the edge of the Salton Sea

through though we were, we rolled into our blankets — thankful for them — and went to sleep. In the morning it was even less pleasant, for it was cool, and all our clothes were wet through. So we did without them. There was not a shred of anything to make fire with, so we ate a cold lunch, and then, still naked, got into our boats and rowed ourselves warm. As we progressed the sea became very rough, and compelled us to shoot across as quickly as we could to the nearest point for Volcano station.

Before we landed I became very seasick and was thankful to get ashore. Here I determined to spend the day, drying out our bedding, and getting some sleep. We fixed up a canvas awning on four of our oars and rested there all day. It was night before I got over feeling so wretched, but when evening came I began to plan to get away. We had to carry about 300 pounds of stuff to the station, which was fully four miles away. Van took the camera case and my book and pamphlet case while I got supper. As the flat was as bare as a bald head of anything of which I could make a fire, I carried the coffee-pot, stew-kettle (into which I had already cut up potatoes and three onions), and the rest of the provision for supper and breakfast to the old railway track a mile away, where, with abandoned ties, I made first a good cooking fire and then a camp-fire. I got supper ready, and it smelled good. Van was a long time coming. I hollered! No reply. I waited half an hour — an hour longer — still he didn't come! So I piled on two more ties and ate my supper. Just as I was finishing I called again. No response! Half an hour later I shouted, and from the far darkness came his reply. When, finally, he reached camp, tired out and hungry, I learned that he had had to cross a dozen deep gullies or arroyos, all of which were awkward to cross. Not a sign of them could be seen at a distance, and little until you were almost upon them. The country is here and there seamed with them and they make walking *with a burden* very wearisome as I discovered anew next day. After Van had had his supper we walked back in the moonlight to our beds by the sea where our boat was.

It was a wonderful morning when we awoke. It was cloudy and cool. After breakfast we carried our things to the depot. Each pack seemed to weigh 350 pounds before we reached the station,

Photo. by George Wharton James

"VAN" AND HIS PACK AFTER WALKING FROM THE BOAT ON THE SALTON SEA

but persistence and patience got us there at last and our journey was at an end.

In the former chapter I have told how we afterwards hunted for the boat but could not find it. It is now doubtless wandering, a derelict on the Salton Sea, or is being used by trackmen or Indians.

A side gorge in the San Jacinto Mountains

Table showing Minimum, Maximum, and Mean Temperatures, Rain Precipitation and Direction of Prevailing Winds at Indio and Salton on the Colorado Desert for the past twelve years.

Especially compiled for this work by A. B. Wollaber, U. S. Weather Bureau, Los Angeles, California.

INDIO, CALIFORNIA.

YEAR	JANUARY					FEBRUARY					MARCH					APRIL					MAY					JUNE				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	83	23	54	0	.....	90	32	45	0	.....	102	36	64	0	.....	100	53	75	0	.....	102	58	79	0	.....	103	62	80	0	.....
1895	59	28	48	6.01	.....	96	38	62	0	.....	95	44	67	0	.....	102	44	77	0	.....	108	62	84	0	.....	112	68	90	T.	.....
1896	80	29	55	....	.....	89	31	57	0	.....	95	40	64	0	.....	83	43	67	0	.....	110	58	78	0	.....	116	70	92	0	.....
1897	77	35	53	1.10	.....	78	34	55	.19	.....	85	35	63	0	.....	102	43	73	0	.....	...	..	..	....	.....	106	70	87	0	.....
1898	80	24	48	.10	.....	89	39	59	0	.....	89	29	58	.30	.....	105	48	76	0	.....	102	56	76	0	.....	113	69	88	0	.....
1899	86	25	54	.40	W.	87	30	62	0	W.	89	46	66	0	W.	100	57	77	0	W.	102	61	77	0	W.	114	65	93	0	W.
1900	86	40	58	1.00	.....	82	40	60	0	N.W.	96	42	67	.30	W.	98	36	61	.15	N.W.	103	54	81	T.	N.W.	109	70	89	0	N.W.
1901	76	23	51	.29	.....	92	38	64	1.46	.....	91	50	65	0	N.W.	95	51	70	0	N.W.	100	50	77	0	N.W.	115	69	87	0	N.W.
1902	84	30	54	.40	N.W.	86	34	57	.20	N.W.	84	46	63	0	.....	102	58	75	0	N.W.	104	62	79	0	N.W.	117	70	89	0	N.W.
1903	90	37	58	0	.....	85	28	55	0	.....	90	45	65	0	N.W.	98	53	73	.75	N.W.	106	60	81	0	N.W.	117	72	91	0	.....
1904	...	..	..	....	.....	..	..	..	....	.....	..	..	..	....	.....	110	43	78	0	.....	113	43	80	T.	E.	116	62	95	0	S.E.
1905	..	..	..	....	.....	72	30	50	4.10	.....	89	43	64	1.30	.....	93	45	70	0	S.E.	107	47	74	T.	N.W.	110	64	87	0	N.W.
1906	83	23	54	T.	N.W.	88	42	63	.97	N.W.	90	39	64	2.06	N.W.	98	42	69	.47	N.W.	101	55	76	0	N.W.	114	62	87	0	N.W.

YEAR	JULY					AUGUST					SEPTEMBER					OCTOBER					NOVEMBER					DECEMBER				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	117	80	96	T.	.....	114	80	90	0	.....	113	66	88	0	.....	105	56	79	0	.....	104	46	70	0	.....	79	40	55	....	.....
1895	114	76	95	0	.....	116	68	94	0	.....	114	62	88	0	.....	108	63	82	0	.....	95	42	65	0	.....	82	19	55	0	.....
1896	...	..	..	....	.....	110	73	90	0	.....	101	62	82	....	.....	96	49	71	0	.....	80	39	60	0	.....	73	38	45	0	.....
1897	115	75	94	0	.....	115	75	94	0	.....	105	58	73	2.10	.....	92	36	71	0	.....	87	30	62	0	.....	82	20	53	0	.....
1898	116	70	94	0	.....	113	78	93	.30	.....	109	68	87	0	.....	101	52	75	0	.....	92	33	59	0	.....	78	28	51	1.00	.....
1899	112	80	93	0	W.	108	70	87	0	E.	110	70	90	.10	W.	100	54	71	0	W.	85	42	59	.60	.....	78	33	54	....	.....
1900	114	77	93	0	N.	109	68	89	0	N.W.	95	50	77	4.42	N.W.	97	45	72	1.04	N.W.	87	45	62	.17	.....	82	32	52	0	S.W.
1901	113	82	97	0	.....	115	80	94	0	.....	107	66	85	0	N.W.	99	52	78	0	N.W.	85	48	65	0	N.W.	78	25	53	0	.....
1902	114	72	89	.10	N.W.	112	75	93	0	.....	116	66	90	0	S.W.	98	60	76	0	.....	84	42	61	.50	S.E.	73	28	52	.80	.....
1903	...	..	..	....	.....	...	..	..	....	.....	...	..	..	....	.....	105	50	82	0	.....	97	36	62	0	.....	...	..	..	....	.....
1904	116	72	97	T.	.....	...	..	..	.33	.....	...	..	..	....	.....	92	67	79	0	.....	...	..	..	....	.....	...	..	..	....	.....
1905	125	67	93	0	S.E.	116	69	94	0	.....	110	48	85	T.	S.E.	106	45	75	T.	S.E.	87	30	61	1.06	N.W.	79	20	54	.14	N.W.
1906				*																										

* Not available at present.

SALTON, CALIFORNIA.

YEAR	JANUARY					FEBRUARY					MARCH					APRIL				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	79	24	53	0	.....	90	28	55	0	.....	103	38	69	0	.....	103	54	80	0	.....
1895	69	37	51	....	.....	90	37	60	....	.....	105	49	68	0	.....	105	58	80	0	.....
1896	112	30	64	T.	.....	95	33	66	0	.....	104	40	69	....	.....	100	45	74	0	.....
1897	74	40	54	1.17	.....	80	35	54	0	.....	80	48	59	0	.....	112	62	79	0	.....
1898	78	30	49	.45	.....	95	32	50	0	.....	95	36	58	.35	.....	117	50	82	0	.....
1899	87	29	52	.30	E.	90	29	58	0	W.	93	45	63	0	W.	104	50	75	0	W.
1900	78	44	66	0	W.	87	35	65	0	W.	99	55	79	.12	W.	100	55	70	1.50	W.
1901	77	31	51	.20	W.	96	37	66	2.80	W.	95	47	66	0	W.	102	49	78	0	W.
1902	84	28	57	....	E.	88	31	63	T.	W.	88	40	65	.81	W.	102	55	79	0	W.
1903	83	34	58	0	E.	82	30	56	.15	.....	97	39	66	.27	S.W.	108	45	73	1.33	S.W.
1904	78	27	52	0	E.	90	30	58	0	N.	98	40	66	.25	N.	105	40	72	0	N.W.
1905	79	27	57	1.80	N.	82	30	59	2.23	N.	90	45	66	2.26	W.	93	48	70	0	W.
1906	...	..	...	....	.....	78	28	56	0	S.E.	...	..	...	....	.....	...	..	...	....	.....

YEAR	MAY					JUNE				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	111	55	84	0	.....	118	68	90	0	.....
1895	116	70	90	0	.....	121	72	96	0	.....
1896	124	62	84	0	.....	128	75	101	0	.....
1897	112	74	94	0	.....	118	84	99	0	.....
1898	109	60	73	0	.....	120	73	94	T.	.....
1899	109	58	77	0	E.	123	60	94	0	E.
1900	117	69	94	0	.....	121	79	99	0	.....
1901	105	63	83	0	W.	124	77	94	0	.....
1902	108	62	84	0	W.	127	70	97	0	E.
1903	116	48	79	0	N.	120	62	94	0	.....
1904	109	53	80	0	S.E.	115	61	89	0	N.W.
1905	110	47	74	0	W.	110	56	83	0	W.
1906	...	..	...	....	.....	110	50	90	0	.....

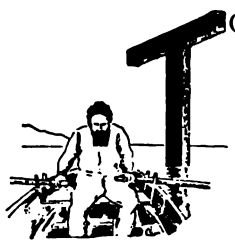
YEAR	JULY					AUGUST					SEPTEMBER					OCTOBER				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	119	82	100	.23	.....	117	78	99	0	.....	115	72	91	0	.....	110	56	83	T.	.....
1895	...	..	...	....	.....	117	74	98	0	.....	117	70	91	0	.....	108	60	83	T.	.....
1896	120	84	101	.18	.....	120	80	98	.51	.....	...	..	...	....	.....	111	63	85	.93	.....
1897	...	..	..	....	.....	124	90	107	0	.....	117	78	99	.05	.....	108	60	79	0	.....
1898	123	80	100	0	.....	121	80	98	T.	.....	116	70	92	0	.....	105	58	78	0	.....
1899	120	90	102	0	E.	117	82	96	.45	E.	119	75	100	0	E.	104	55	78	.14	W.
1900	126	74	97	.50	.....	115	68	93	0	W.	113	63	86	0	W.	106	50	79	.20	W.
1901	118	87	104	0	N.W.	124	75	101	....	E.	...	..	...	....	.....	112	52	83	0	.....
1902	120	74	98	.30	E.	121	74	98	0	E.	117	64	94	0	S.E.	98	58	78	0	.....
1903	118	66	88	0	.....	121	65	94	0	.....	120	60	84	.15	W.	99	46	73	0	W.
1904	116	58	92	1.00	E.	112	77	95	2.00	E.	110	60	85	0	E.	102	47	75	0	E.
1905	120	66	91	0	S.W.	...	..	...	....	.....	105	70	83	0	N.E.	95	43	70	0	N.W.
1906				*																

YEAR	NOVEMBER					DECEMBER				
	Max.	Min.	Mean.	Precip.	Wind Dir.	Max.	Min.	Mean.	Precip.	Wind Dir.
1894	94	52	68	0	.....	74	39	54	1.30	.....
1895	98	34	70	T.	.....	110	18	60	0	.....
1896	89	47	71	.46	.....	72	45	56	.62	.....
1897	85	42	69	0	.....	79	28	53	0	.....
1898	95	40	59	0	.....	75	35	46	.59	.....
1899	88	48	70	.11	W.	78	38	58	T.	W.
1900	93	49	67	0	S.W.	81	35	53	0	W.
1901	99	45	70	0	.....	80	32	58	0	N.
1902	85	39	63	.22	N.	77	32	55	.98	N.
1903	86	39	63	0	.....	81	29	55	0	.....
1904	93	33	64	0	.....	84	27	55	0	N.
1905	80	35	62	.30	.....	78	12	51	0	W.
1906										

* Not available at Present.

CHAPTER XXXVI

The Salton Sea and Its Mystery



TO the scientific observer, even, the vastness of the importance of recent events at the site of the work of the California Development Company on the Colorado River, just on and over the Mexican Boundary Line, is not apparent. They are not only of national but of international importance and consequence. Already the national government of Mexico has appointed a commission to report on the matter, and our own government has instituted thorough and searching inquiries through its corps of engineers of the U. S. Reclamation Service.

As a result of the cutting of a small canal — a temporary expedient for relieving a water-shortage caused by the silting of a few miles of the already existent canal — the body of water of the whole Colorado River has been absolutely diverted from its proper channel. Not a single drop flows beyond this new canal intake. Its floor is as dry as a desert. Where for centuries this muddy and lazy stream flowed along in silent majesty to the Gulf of California, there now appears nothing but a dry bed, as void of water as a desert, and as desolate as the course of a flood can make it.

Where, on the other hand, for untold years, a salty, dry basin of an extinct inland sea existed, there is now to be found in the heart of Southern California an exquisitely beautiful lake, nearly fifty miles long and in places twenty miles broad. A sea in the heart of the American Sahara! For this portion of the Colorado Desert has been declared by the government experts to "have a more pronounced desert climate than those parts of the Sahara Desert where regular meteorological observations are made."

These are startling facts; facts which have an important bearing upon the development of this interesting portion of our great Republic.

In its passage across the Salton Basin the main line of the Southern Pacific was laid at a very low level, and therefore when the water reached its tracks, transcontinental traffic by this route for both passengers and freight was seriously threatened. A shoofly was built around the rising waters, in the hope that they would soon subside. This was speedily flooded; another was built only to be submerged in the same way. Then another and yet another, until, in desperation, the Southern Pacific tore up as much of its track as was possible in the immediate vicinity of the water and in April completed forty miles of new track upon a higher level.

Now (October, 1906), to provide against possible contingencies, the railway company is planning to place its tracks at a still higher level.

This is by no means the first time the Salton Basin has been flooded since its prehistoric evaporation and becoming of a "playa."

When Dr. Veatch visited the mud volcanoes in 1857 he reported the Salton Sea — though he did not know it by that name — as "a vast sheet of crystalline chloride of sodium. Into this lake the arm of the Colorado, known as New River, discharges itself. The lake, having no outlet, would probably soon regain its ancient area if the channel of New River afforded a more generous supply of water."

He refers to the New River as having broken away from the Colorado only a few years before that time.

Several times between 1857 and 1891 fugitive references may be found to overflows of the Colorado causing a rise of water in the Salton Basin, but it was not until after the New Liverpool Salt-Works was in active operation that these intermittent risings caused any uneasiness.

In 1891, on the 23d of June, a large volume of water was found flowing into the basin some thirty miles south of the salt-works. Various theories were propounded to account for the unusual phenomenon, but none being satisfactory, the manager of the

Photo. by George Wharton James

COLORADO RIVER POURING IN AT THE "CUT"

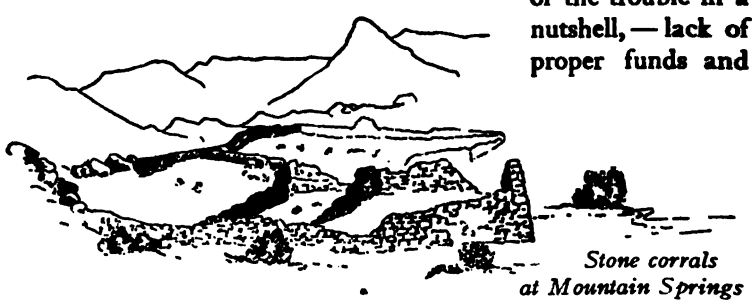
salt-works, Mr. George Durbrow, determined to investigate. He found that in the preceding February there had been a high flood in the Colorado and that, below Yuma, near the Algodones, it had overflowed its banks. Some of this overflow water filled up various depressions and remained until the annual flood, caused by the melting snows, occurred in the following June. The waters of this second flow uniting with those of the February flood forced a large volume into the north-flowing channel of the Alamo, thus speedily forming a lake in the Salton Basin ten miles wide by thirty miles long, and about five feet deep in its deepest part. As this flood soon evaporated and caused but little trouble no further attention was paid to it, but when it occurred again in 1905 and rose far above its former level, causing the destruction of the salt-works and the submerging of the railway track, it was found necessary to direct a great deal of attention to it.

The cause of this flood is primarily to be placed upon the imperfect financing of the California Development Company.

As a consequence of inadequacy of funds the engineer in planning for the rapid development of the Imperial Valley was compelled perforce to meet urgent and imperative necessities rather than perform solid and permanent work. Two thousand dollars were compelled to be spread over work that required ten thousand. The results were disastrous. In the winter of 1903–4 the company was unable to supply all demands for water and this caused a crop failure on some lands. A hue and cry was at once raised; agitation was begun for government ownership; sensational attacks were made on the company by the press; damage suits amounting to $400,000 were threatened or brought. As was easy to foresee, this ruined the credit of the company and still further hampered its operations.

During the summer floods of 1904 the first four miles of the canal from the river was silted to such an extent that it would not furnish enough water for the needs of the coming winter grain crop. With the machinery at their disposal the company had insufficient time to dredge this four miles. One alternative presented itself. They had either to face another water shortage, which meant ruin to many settlers as well as themselves, or resort

to what had several times been done before elsewhere, viz., *cut another channel between the river and canal at a point below the silted four miles.* The distance across was only 3,300 feet; two weeks' work for the dredger. The fall of the canal for eight miles below this point was five-tenths of a foot per mile. From here the canal dropped eight feet in the next three miles, but as the river from this proposed lower intake had a fall of approximately one foot to the mile, the danger of retrogression of grades in the canal and a change in the channel of the river seemed very remote, and it was decided, as the least of two evils, to cut the channel through and put in a controlling gate *later* if they had funds sufficient; if not, then to close it by a brush-dam before the approach of the summer floods. There is the cause of the trouble in a nutshell, — lack of proper funds and



Stone corrals at Mountain Springs

the choice between bringing ruin on thousands of settlers through lack of water for their crops and the cutting of a temporary canal to supply this lack. This is where the nub of criticism has lain. The necessity for controlling head-gates at the heads of canals is recognized by all engineers, was fully recognized here by Mr. C. R. Rockwood, the chief engineer, but time was limited and ruin for thousands was before him. What could he do? He did what any rational man in similar circumstances would have done, — *he took the chances.* Had nothing unforeseen happened practically nothing would have been said. Men the world over are always taking desperate chances. It should be here explained, also, that these chances had been taken without damage on four previous occasions. It must be remembered that these men were grappling with a new and

gigantic problem. As in all such cases, emergencies arose which had to be settled as they arose and in the best manner possible under the circumstances. When the original head-gate was put in at the first intake by the well-known irrigationist, Chaffee, who was then the director of the company's practical affairs, he claimed that he could not follow Mr. Rockwood's plan which required the floor of the gate to be at 100 feet, even, above sea-level. He said that on account of the difficulty of sinking the floor in the quicksand it could not be placed so low, and without Mr. Rockwood's knowledge or consent built it so that its effective floor level was 105 feet. The low water elevation of the river opposite this gate is 108.2, or only 3.2 feet above the floor. Sufficient water at this depth could not be forced through the gate to prevent silting of the canal below.

To overcome this difficulty a "by-pass" was cut each year around the head-gate in order to secure a sufficient flow, and these by-passes, or temporary expedients, were always closed up before high water.

The canal now cut below the silted-up portion was simply another of these temporary expedients, and had nothing unusual occurred nothing would have been said except praise for the engineer whose daring had saved a large population and enterprise from ruin. In this case, however, the unprecedented happened. A flood came in December, followed at short intervals by others of constantly increasing volume. The canal banks near the river were washed away and the canal greatly enlarged. Strong efforts were made at this time to close up the break. Piling was driven in, the size generally used being 6x6 with a few 8x8 and 10x10 with brace piling to hold the sacks of earth and the brush in place. The high water and lack of adequate supplies retarded the work, though twice the break was repaired to within about six feet. Just at the critical juncture the hoisting machine of the dipper-dredger, which was working day and night throwing in dirt, broke, and during the half day that it took to repair it the flood washed out a hole large enough to contain the whole dredger. The time thus lost could not be regained, and in Los Angeles, at the head office, it was deemed that all the damage that could be done was already accomplished and it

was decided to allow the break to remain as it was until low water.

This was a fatal mistake. Had the engineer's solicitations been heeded and one more determined effort made to forward immediately the needed supplies the opening could have been closed with comparative ease and the great future damage prevented. For, as the floods continued, the temporary canal was not only growing wider but deeper. From an original fifty feet wide and five feet deep it grew to several hundred, and the force of the great volume of water scoured out the channel to considerable depth.

In April, 1905, the head of the Irrigation Company saw his serious mistake. He and the chief engineer began to solicit the Southern Pacific Company for funds, offering them a strong hand in the management of the Development Company if they would take hold.

While these negotiations were pending, another effort was made to close up the break, but it failed and was abandoned in the following month.

In the meantime the water users in the Imperial Valley known as Imperial Water Company No. 1, were growing more and more nervous as each day continued with the water pouring into the Salton Sea. They did not fully understand the situation, and as is well known, unknown dangers are generally more distressing than those we understand. At their earnest solicitation, backed up by an offer of $5,000 advance in funds for the purpose, the president of the company, against the advice of his engineers, decided to make another attempt in May. The engineers argued that an attempt against a certainly rising river would inevitably result in failure. The Southern Pacific advanced some material to aid in this effort (for which it has since been paid), and under the direction of Mr. C. N. Perry, one of the engineers, the work was begun. It consisted of a double row of sixty-foot piles. The rows were placed twenty feet apart and the piles driven at five-foot intervals. The space between the rows was filled with fascines weighted down with sacks of earth. The summer floods were rising, however, and before this work could be completed the waters rose over the banks of the river, making it impossible to get either brush for

fascines or earth to fill the sacks, and all work was temporarily abandoned, and on Mr. Rockwood's return from the East, June 14, it was given up completely.

The accompanying diagram will give the location of the intakes. Intake No. 1 is where the old head-gate was placed, which soon became choked up with detritus and was used only during high water, as at low water it was some four or five feet below water level. Intake No. 2 was cut on the Mexican side of the boundary, to conform with a provision of the Mexican charter to the Irrigation Company. It was practically unused. Intake No. 3 is the "temporary cut" which has caused all the trouble. It was the intention of Chief Engineer Rockwood, when this cut was made, to place therein, as speedily as funds would allow, the necessary head-gate required, so that this would have become the permanent intake, properly under control, required by the Mexican concession. It was also his intention, constantly expressed, to construct a permanent and sufficient head-gate at or near Intake No. 1; and, as will be seen shortly, these two are the major propositions upon which the company are now vigorously working.

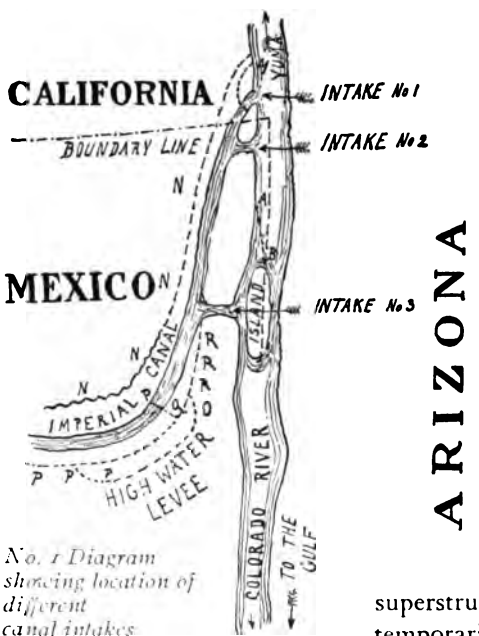
As a matter of important history I deem it wise to briefly recount the later efforts made to close the cut. From the second diagram the location of the respective endeavors is shown.

When work on closing up Intake No. 3 began in May, 1905, the cut was about 100 feet in width. When the water subsided it had grown to 800 feet in width, and was still carrying about 14,000 cubic feet of water per second, with a depth at one point of twenty-four feet.

On July 18 the Yuma gage showed 121.8 feet, with 18,000 cubic feet flowing through the intake, and only 7,000 passing down the old river channel to the gulf.

A new attempt was now to be made to control the water. A site was chosen a mile above the former one. By reference to the diagram, it will be seen that an island divides the Colorado River channel opposite Intake 3. This island is about 3,000 feet long by 1,200 feet wide. The plan now proposed was to construct a light jetty of piling and brush, beginning at a point on the Mexican side marked *A*, and continuing to a point on this island marked *B*. The idea in this effort was to control the river

by the formation of a sand-bar behind the brush, thereby diverting the main portion of the flow to the Arizona or eastern channel of the island. The experiment failed. In the meantime preparations were under way for a more ambitious undertaking. In August materials were ordered for the new attempt. This involved the construction of a gate at Intake 3 large enough to pass the entire flow of the river at low stage, after building which it was the intention to construct a permanent dam across the rapidly widening "cut." When this dam was secure the gate would have been closed, thus raising the water and throwing it down the old channel. This gate it was proposed to make the one required by the Mexican government. The floor was to be of concrete three feet in thickness on a pile foundation. The superstructure was to be of wood temporarily, but ultimately to be replaced by concrete.

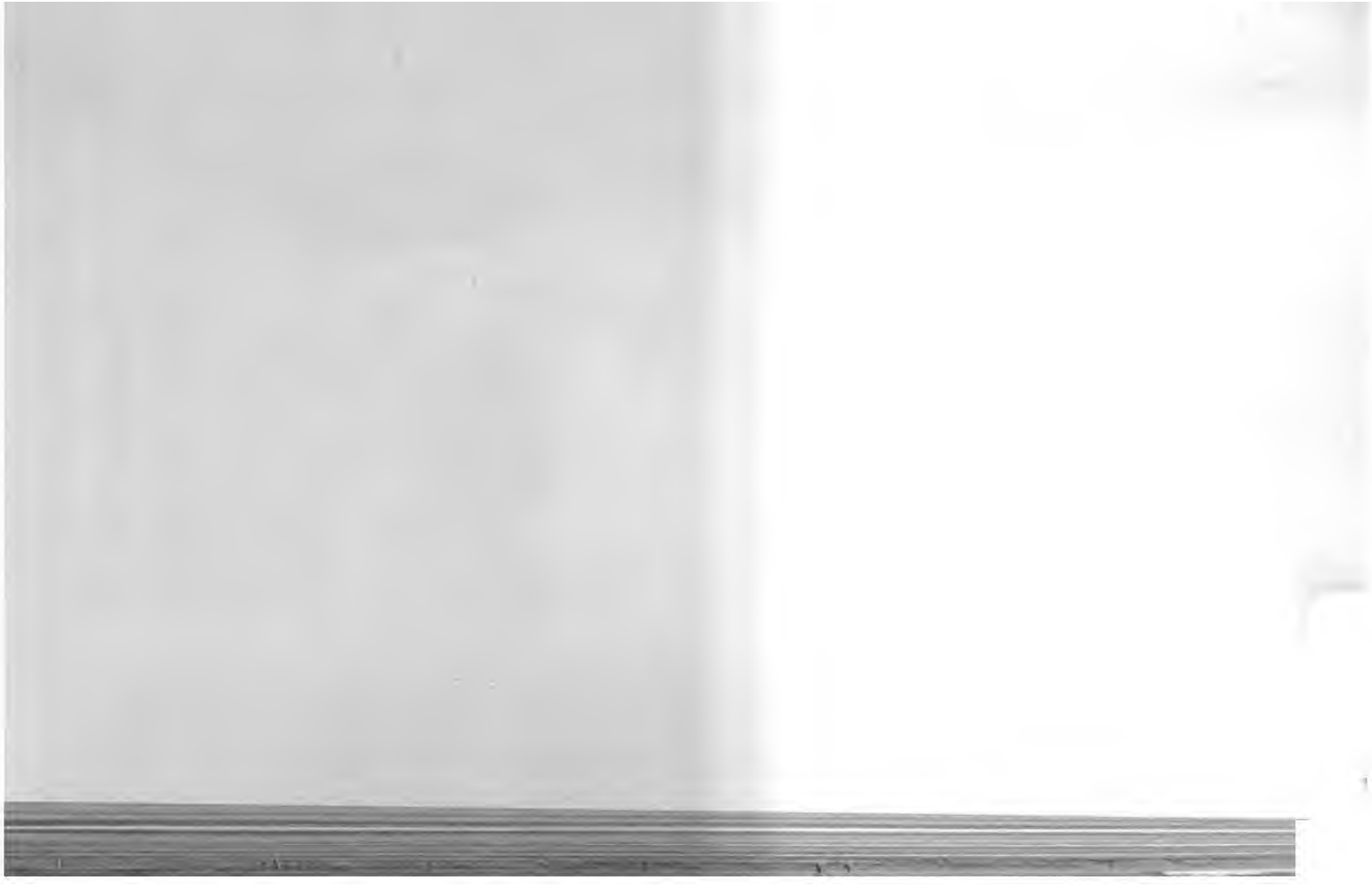


No. 1 Diagram showing location of different canal intakes

A two-yard dipper-dredge was at once set to work excavating a big channel to carry the water around the Rockwood Gate site, as marked *E* on Diagram 2, and the steamer ran around this pass while work on the dam progressed. This consisted of piles driven at the point marked 5 on Diagram 2. These were taken completely across the channel, capped, and a runway built on them from one side to the other. The steamer hauled gravel for a week to make a bottom around the piling, and the cutting of 150 tons of brush for the fascines was rapidly proceeding. All

Photo. by George Wharton James

THE DRY BED OF THE COLORADO RIVER, JUST BELOW THE "CUT"



the material was on the ground for the new structure, and it seemed on a fair way to be successful, when orders came from headquarters to stop the work. The water was rising so rapidly at Salton that some other expedient must be tried at once requiring less time, and thereby saving the complete washing away of the railway tracks. This endeavor is known as No. 5.

The Southern Pacific engineers proposed the construction of a pile-dam across the west channel, near the head of the island at the point marked 6 on Diagram 2 in order to force the water down the east channel. The west channel was here 650 feet wide and about 10 feet in maximum depth. A dam was to be built of woven wire cable mats, filled in with bundles of brush and barbed wire anchored in the river with piling. When completed it would have to withstand a water pressure of sixteen feet. Work was begun in the middle of the channel, and with two pile-drivers and a large force of men rushed as much as possible.

No. 2 Diagram showing location of the different endeavors to turn the waters of the Colorado River

All progressed favorably until the piling and mats reached within a hundred feet of the shore on both sides. As the work was nearing completion water was raised in the old river channel on the west side fully fourteen inches. No matter how much weight was put on the mats to prevent scouring, the water would get under them and cut away the channel. The island, on which all hopes depended, began to wash away. On the twenty-ninth of November the severest flood since February, 1891, swept down the river with resistless force, and carried away a portion of the work and much of the equipment. The island was completely flooded, and 240 workmen, thirteen wagons, a car-load of hay, another of

provisions, and thirty-eight head of horses had to be transferred to a barge instanter, or they, too, would have been swept away.

This was the sixth and last effort prior to the one upon which work is now progressing. The present plan includes the construction of a permanent head-gate at point marked *M* on Diagram 1. This is four miles up the river from the lower intake, and on the United States side of the boundary. The anchoring foundation is solid rock, and the structure is of reinforced concrete. It is 185 feet wide and twenty-six feet high above the sill. The floor is placed eleven feet below the low-water mark and four feet below the river's bed. It has 154 feet of water openings, and at the lowest water stage of the river can pass 7,000 cubic feet per second.

It is composed of twelve reinforced concrete cells about sixteen feet wide by fourteen feet high. These are filled with rock gravel, and sand, which will be fully ample to make the structure stable, so that it will withstand the pressure of the heavy floods.

On March 20 the excavations were all completed, the concrete work actually begun, and in September everything was completed and the massive gate ready for service. It will carry 7,000 feet of water per second, while the flow of the Colorado at low water is only about 5,000 feet, and sometimes as low as 3,500 feet per second. The building of this gate implied the widening and deepening of the old canal, which is but eighty feet wide, and at low water can carry but two feet in depth. This is being enlarged to 170 feet wide and eleven feet deep (see dotted line *N*, Diagram 1) below low water. This work involved the excavation of 1,800,000 yards of earth.

The permanent work at Intake 3 was resumed near the point where it was abandoned last year (Diagram 1, *P*) with the necessary enlargements and alterations caused by the changes brought about in the interval by the power of the stream. This is practically a resumption of endeavor No. 5. The floor of the new gate is 200 feet wide and sixty feet long. It is placed eleven feet below the extreme low-water level in a quicksand formation, and anchored to 533 foundation piles. Aprons thirty feet in length extend from the floor to the coffer-dam wall, and wings 100 feet in length extend up and down the stream. Nearly 600,000 feet o

lumber, including 1,680 lineal feet of sheet piling wall, six inches thick, driven from twelve to twenty-two feet, are used in its construction and protective works. Eight hundred and fifteen round piles are used in the foundations, wings, and diversion jetty.

The earthwork in the approaches to the gate involved the moving of 120,000 cubic yards of earth in excavating an average distance of 350 feet, and the fill in the diversion dam and levees contains 59,600 cubic yards of earth, 2,000 cubic yards of brush, and 20,000 grain-sacks filled with gravel.

It was decided on the seventeenth of December, 1905, to resume this work. New material had to be ordered, as all the original supply had been removed to carry on the work which the November flood had destroyed. On the eighth of January, 1906, work on the walls of the coffer-dam began. This is 250 x 120 feet, and contains 740 sheet piles 6 x 12 inches, twenty-two feet long. It was completed and the earth within excavated on the fifteenth of February. An eight-inch and a six-inch centrifugal pump were set to work, and lowered the water as far as was necessary in two days' time. The eight-inch pump kept it at a proper level, while a large force of men worked day and night.

While work on this gate, known as the Rockwood Gate, was progressing, equally energetic preparations were being made for work on the great dam to close the rapidly widening cut near by. When the cut was first made it was fifty feet wide and five feet deep. In November, 1905, it was 300 feet wide; in March, 1906, 650 feet; in April, over a thousand, and in September, when the actual work of closing began, over 4,000 feet. A railroad spur was built, thirteen miles long, from Pilot Knob to bring down solid rock to help fill up the gap; thousands of men and teams were engaged, and day and night the work never ceased.

The Rockwood Gate was completed, and the pile-driving, matlaying, and rock and earth dumping began simultaneously on each side of the cut, when, on Thursday, October 11, an extra flood of water came rushing down the river and carried away part of the gate. This, at first, seemed another almost fatal blow, but, with resolution, the engineers hammered away, repaired a railway trestle that crossed the river below the gate, and began to fill up the gate space with solid rock. Every railroad quarry

within a distance of 300 miles is supplying rock which is being hauled to the spot as fast as engines can take it. A second trestle is being built beside the first to aid in the speedy dumping of the rock.

As an additional precaution a railway spur is being built to the concrete gate, Intake No. 1, so that should it be necessary another dam will be constructed across the river at that point to divert the whole of the Colorado through the gate and thus into the canal, while the work of closing the break below is completed.

Here, then, the matter stands at the present moment of writing, October 20, 1906. The concrete gate at Intake No. 1 is completed. The canal from that point is being widened and deepened. The break in the Rockwood Gate is being filled in with rock. The gap near the Rockwood Gate is being closed on both sides, and if the dam holds the great work will be done, and the Colorado River once more tamed, bitted, and controlled.

It was in March, 1906, that I visited the Salton Sea for the first time since its last uprising. There, with the water flowing over the railway tracks, I saw miles of telegraph-wires stretching over a sea where once was the dry Le Conte playa, the telegraph-poles standing in several feet of water.

It was with a singular feeling that I saw the slowly oncoming waters drive back the tokens of an advancing civilization. When the railway tracks were laid they went directly through a large portion of the below-sea-level area. The flooding therefore was inevitable.

As I stood there on the half-submerged track at Mortmere, I read the now neglected railway-siding sign, "Mortmere To San Francisco 630 7-10 miles," standing in several feet of water. Close by was a group of tules, several budding cottonwood trees, willows and arrow-weed, formed by the overflow from the useless wells. The wind blew the waves between the track and the sign, and the wash fell upon the ear with rhythmic regularity. With calm complacency the sun sent its glistening path of burnished gold over to the nether edge of the sea, while mocking-birds and linnets sang as merrily as if the washing away of forty miles of railroad track and the submerging of the telegraph-wires were an ordinary occurrence.

But that wash of the sea. As I sat down and listened to it my thoughts rambled away from the desert. I was no longer in a waste region. I was on the sea, where monster freight steamers and sailing vessels shouldered their way through the blue waves. I heard the merry music of the orchestra on the pleasure steamers, and the dull thud of the engines and the throb of the revolving screw of a great transatlantic liner. For a long time I thus sat until in my dreams I heard the voice of my friend asking how much longer I intended to sit there. And then I found that the "wash of the desert sea" had led my mind captive and there in the heart of the Colorado Desert I had been enjoying again the experiences of past transatlantic voyages. A sea in the desert! How strange! It was wonderful, unique, never to be forgotten.

The march of the Salton Sea

In June and July the flood was so high that both Calexico and Mexicali suffered considerably, houses and stores being actually washed into the widened and deepened channel of New River. A railway is now built from Pilot Knob to the intake, a distance of twelve miles, so as to render the handling of the necessary supplies much more easy, and also to convey rock, of which the Knob is composed, to act as a filler for the dam. Everything is now ready waiting for the lowering of the water. Men and teams in great number are on hand. The intention is to have piles ready for driving, wire mats ready for lowering into position, and begin the work on both sides at once, gradually narrowing the channel until the two portions of the dam will meet in the center and the rush of water will cease.

It was early in March we made the trip from Yuma down the overflow to the Salton Sea, and the latter part of the month when we went back to the sea to get our boat and supplies. On June 11 and 12 I again visited the sea with the hope of finding my anchored boat. A naphtha launch and its engineer had been kindly placed at my disposal, and with my assistant, Mr. Van Anderson, we practically circumnavigated the whole sea. The night of my arrival I slept at the new Salton station. Everything was still and silent when I went to bed, save the soft purring of the telegraph-wires. But during the night the waves began to roar and by morning one could easily have thought himself by the side of the ocean. The sea, which was without a ripple the night before, save here and there where a fish jumped out of the water, was now very rough.

The pelicans of Pelican Island, Salton Sea

On the Salton Sea the prevailing winds are from the west, and these winds generally come up after sunrise. The lake, though it looks quiet enough from the distance, is then lashed into heavy waves, many of them with white caps, and a heavy rolling ground-swell adds to the discomfort and hindrance of the rower unwary enough to be out in a boat at such a time.

During the day it is hard for a stranger to tell where the sea merges into the mirages. None but a trained eye can detect the change, and that more because of perfect familiarity with the metes and bounds of the sea than because of any real and perceptible difference between real and mirage water.

But when the sun goes down behind the San Jacinto range, shooting its darts and floods of gold through narrow peaks and wide canyon gorges, then, then is the time to sit and enjoy the exquisite and placid beauty of the Salton Sea. Geneva is not more picturesque, save for its fringes of trees, nor Galilee more

Photo. by George Wharton James

ON PELICAN ISLAND. THE SALTON SEA

blue, and Windermere, save for its historic memories, would be less attractive. Even Tahoe, superb mountain lake of the High Sierras, needs to look well to its laurels, for this parvenu modern sea, — small reminder of its grand and extensive prehistoric ancestor, — desert, foot-hill, and mountain surrounded, has its own fascinations and charms, some of them peculiar, some weird, some fantastic, some mysterious, but some exquisitely beautiful that take hold of the esthetic senses as well as the imagination and hold them in bondage.

The name, Salton Sea, has had much to do in furthering the false ideas that people have had of its being a salt-water lake. When the waters of the Colorado first began to pour in down the

Nesting pelicans, Pelican Island, Salton Sea

beds of the New and Alamo Rivers, the vast, uncovered, and loosened up beds of salt at the New Liverpool Salt-Works naturally made the water very saline. But as the inflow continued, the proportion of salt in solution became much less, so that now one may drink of it without inconvenience. Often on the deserts of Arizona and New Mexico have I had to drink water twice or thrice as brackish as this of the Salton.

A little incident observed by Mr. Van Anderson illustrates the pathetic struggle for life such untoward events bring upon even the lower animals. As the launch was cruising among the partially submerged mesquites near Fig Tree John's, he observed, clinging to the uppermost branches of a mesquite, with the waters not a foot away, a poor, starved-looking kangaroo-rat. Its head

bent forward, with protruding eyes fixed intently upon the water, we had to shout twice ere it looked up and then only to give to us a momentary, pitiful look.

How long it had been there we have no means of knowing. Its fate, however, is certain unless some friendly log comes floating by and affords an opportunity for escaping to the dry land. Otherwise the poor little creature will undoubtedly stay until it either falls into the water through fatigue and want of food, or it is submerged by the rising tide.

When the Salton Sea first began to rise, ducks, geese, mud-hens, sea-gulls, and pelicans appeared literally by the thousands. It was not long, however, before the ducks and geese disappeared, and only the birds unfit for food remained. These also left when the flood subsided, but in December, 1905, and January, 1906, great quantities returned, and the pelicans still remain, having taken possession of the newly made island, near to where we first cached our supplies, which they have made their nesting and breeding place.

When our launch approached we saw thousands of pelicans sitting on the rough and irregular slopes of the island. They had scooped out small basins in the gravel and rocky places and therein had deposited their eggs. As we landed they reluctantly flew away, almost hiding the sky as they passed over us. Eggs by the thousand were to be seen, from one to five in a nest, though generally there were but two. In a number of nests the young were already hatched and a more hideous-looking set of bald-bodied creatures I never saw, their large heads and heavy bills adding to their awkward appearance. In the distance the flocks of older birds had settled, making the sea white and dazzling with their clean and well-kept plumage. Will this newly formed Pelican Island remain an island, or will it cease to be one? It can cease to be an island by the subsidence of the waters that made it into one, or it can cease to be an island by being completely submerged by the inflow of more water. The question, which will it be? will soon be answered.[1]

[1] A despatch from the author, dated November 5, 1906, states that practically all the water has been turned into its old course by the dam at Rockwood Gate.

Photo. by George Wharton James

BUILDING THE CONCRETE DAM ON THE COLORADO RIVER. INTAKE NO. 1

CHAPTER XXXVII

What the Desert Offers to the Invalid

IF what I have already written in the pages of this book has not thoroughly convinced the unprejudiced reader that the desert is a wonderful natural restorer to health, nothing I can specially say will have that effect.

The purity of the atmosphere, the healing properties of the desert plants, the freedom from all ordinary infection, the desiccating and aseptic qualities of direct sunlight, the absence of all city distractions,— these and a score of other equally potent factors all make for health.

Indio has long been heralded as a specially healthful place. The discovery of the pure and delicious artesian water was an additional factor in its favor. A few years ago Mr. N. O. Nelson of Leclaire, Illinois, well known as an employer of labor who believed in copartnership and profit-sharing with his employees, bought one hundred and sixty acres just northeast of Indio, and there established a Health Camp. It consists of tents with board floors and wings, and for a trifling sum any one may come and have the privilege of using them. A meal tent is also established, where, except in the hotter months of summer, meals are served of good, healthful quality at the minimum of price. The camp has its own water supply from an artesian well on the farm. Several cows also are kept and plenty of good fresh milk supplied to the invalids. As yet the camp is a drain upon Mr. Nelson's purse, which he gladly bears for the benefit it is to those who would not fare so well without it.

But a large dream I have long cherished is that a sanitarium for those who are in the *earlier stages* of pulmonary and bronchial affections should be established, where a small fruit farm would give a little light employment each day to the sick ones, where pleasant companionship would be possible, healthful

amusements provided, both indoors and out, excellent meals of the right kinds served and everything done that could be done to give to those who were just beginning to suffer from these evils all the *natural* benefits of the desert, with the needful medical and home care.

That such a sanitarium will ultimately be established I have both hope and faith, when the man or woman is found who deems help to suffering humanity a good enough investment for a score or two of thousands of dollars. I know where devoted men and women of the medical profession, and good nurses of both sexes, can be found to conduct such an establishment were it founded and financed, and erelong, I fervently believe, the needful in money will not be lacking.

CHAPTER XXXVIII

Suggestions for the Desert Tenderfoot

TO be a "tenderfoot" anywhere is uncomfortable, irritating, and sometimes disastrous. To be one on the desert is often to court disaster and even death.

In the first place the tenderfoot should never take his first desert experience in summer. Let him begin in winter when it is cooler and there is less danger from scarcity of water. In starting out from the railway afoot, with burros or driving, be sure and know all that you can possibly learn of your roads. Get maps drawn if possible. Know the places where other roads turn off and where water is to be had.

But I wish to make suggestions only for the desert tramper, who goes alone or with companions, and with one faithful burro on which he packs his unpretentious outfit. He is going away from the beaten track, out on some of the trail trips I have written about herein.

The only personal necessaries for a desert trip are comb (no brush), towels, soap, toothbrush, and pocket-knife. It is well also for each man to see that he has knife and fork, spoon, and agate-ware cup and plate. These can be kept in a small canvas sack. All heavy personal equipments must be resolutely excluded.

A little strong twine is often convenient in one's hip pocket.

In starting out on a warm day don't be prevailed upon to leave your coat with the idea that it will be so hot on the desert that you will not need it. As a rule the mornings are cool, sometimes cold, and changes of temperature on the desert are so marked as to often cause great inconvenience, especially to one not acclimated.

For clothing, a strong khaki or corduroy suit, with plenty of pockets for note-book, etc., is good. See that every pocket is extra strong, so that if things are picked up and put into them they will not give way. In the coat it is well to have pockets with flaps that button down, so that if one sheds his coat and puts it on the burro's pack it can be tied loosely on the outside, handy to get at, with little fear of losing the contents.

Wear shoes with tops to them that lace up so as to keep gravel and sand out. If you expect to do any tramping be sure and have plenty of hobnails put into your shoes. Ordinary leather soles are cut to pieces on some of the granite gravel of the desert in a week's time. Take strong strips of buckskin for laces, and always have an extra pair along.

Take along a case of my rattlesnake remedies and one of the pamphlets in which I describe the action of the poison and how to overcome it. An ounce of prevention is better than a pound of cure, but where one can't be sure of prevention he can at least be forearmed against danger.

Each man should have his own canteen, be personally responsible for it, and stick to it as closely as he possibly can. Never leave a man without a canteen of water, unless he is where a supply is to be had.

It is always well to have a good map of the region in which you are to travel. Of some parts of the desert mountains the Geological Survey has published maps, but for the worst portions — those east and southeast from the railway — the best map I know is the one made expressly for this volume.

For the stock, provide a pair of hobbles for each animal, with an extra pair in case one is lost or injured.

See that pack ropes are new and strong. Take an extra one. Tie-ropes the same, with an extra one or two. Provide also nose-sacks to feed grain to mules or burros. These can be made by slitting down each side of a gunny-sack, leaving the two outer edges as strings to tie over the animal's ears. These take up less room than leather or canvas nose-sacks.

Take a small pot of ointment for saddle-galls or wounds.

Enough grain to give each animal a quart-feed three times a day for the whole trip (if possible).

I suppose every camp has its own rules, but there are some that strike me as of universal application. Anyhow they are the invariable rules of my camps, wherever they may be.

On a camping trip there must be but one boss.

Obedience to that boss must be prompt, effective, and cheerful.

Kicking, complaining, whining are absolutely forbidden under penalty of being sent back. A whining companion on a camping trip is an unmitigated nuisance. He is as the pear blight which kills both leaf and fruit; as the scale which covers the orange and its leaves with a hideous black smut which smothers the life of the tree as well. The whimperer's whines literally cover the mind and soul of his companions with a blackness that can be felt and he kills all the spontaneity, the joy, the pleasure of the party. If a man can't accept the hardships of a trip without playing the baby, send him back home on the instant. I am merciless with such mortals, for I have found by long years of painful experience that to humor the whimperer, to endeavor to please or conciliate him, to try to make things easier, is but to add another lash to the whip with which he scourges you. Like jealousy, the more tolerant you are of whimpering the worse it becomes. The best plan is to kill it at once.

Everybody feels hardship, but the *man* bears it and says nothing, except perhaps to laugh at it. The whimperer sits and pities himself and then rails at misfortune, at his comrades, at himself, at everything and everybody because he didn't stay at home. Then, ye gods, is the time to rise and smite him hip and thigh. No matter at what trouble or expense, SEND HIM HOME!

In saddling the burros let every man learn to do his share. The first thing is to know how to put a saddle-blanket on properly. Remember it is to be between your animal's back and his heavy load, all day, up and down all kinds of places. There must be no wrinkles or creases, and the saddle must rest easily upon it.

In packing the burros remember that each side must be about equal in weight. Study this thoughtfully and make the loads in the kyacks balance as nearly as possible. This avoids saddle-sagging, chafing, and the possibility of the saddle's turning.

Learn to throw every kind of a hitch that will keep your pack on the most securely. I know three or four hitches equal to the

much vaunted "diamond." Get an expert to teach you all he knows and go on learning.

Each man should fold up his bedding as speedily as possible in the morning that it may be ready for packing when the burros or mules are saddled.

Help all you can to make an early start. One hour before seven in the morning is worth three hours after two in the afternoon.

As a rule things pertaining to the commissary are determined by the boss. But one or two things it is well to remember. It often saves one from making unreasonable requests. In packing remember to place everything handy. Have a place for everything and keep it there, so that if needs be or emergencies arise, you can get it certainly at a moment's notice.

Then, too, in making ties remember they have to be untied. Make every knot with the thought, how can this be best made secure so that it can be untied the easiest?

Open no canned goods that cannot be eaten at one meal. Canned is pronounced "condemned" after one meal.

Cut not a slice of bread more than can be eaten.

Let each man cut his own piece of cheese.

Food waste in camp is a thing to be abhorred and unforgiven.

Never be extravagant with water, and never throw away poor water "in expectation" of getting better. Keep what you have until the better water is actually before you.

On reaching camp at night always look out for a place to sleep as early as possible. It is not always easy to find a good spot after dark. Your blankets placed on a spot, or your hat, is the camp notice of location and is always respected.

Where there is a party, let each man do his camp duty promptly, as for instance on arrival at camp, the gathering of wood, the building of fire, the unpacking of animals, etc. Much friction is saved where one man doesn't have to wait until a lazy or indifferent man does what he should have done promptly.

If you are keeping notes of the trip, seize every opportunity to write them up. There is nothing more deceptive and elusive than yesterday's notes written to-morrow. Write up religiously each night before going to bed.

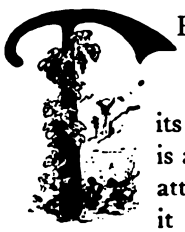
When sleep time comes be sure you are in peace and harmony with all your fellow campers and the world at large. Quit talking when others are trying to sleep. Be thoughtful for them. They may need more or earlier sleep than you. Respect everything in others that ministers to their health, comfort, and legitimate pleasure, and others will be likely to do the same by you. Lie down to sleep then in peace and content. Don't fidget and don't be afraid. See that you have all the blankets you are allowed to take, for what you don't need over you, you can put under you. If it grows cold during the night, have your blankets so arranged that in a moment you can get in "lower down" and thus have another covering over you.

You will sleep as you never sleep indoors, and if you avoid eating and drinking too much your day's tramp or ride will give you dreamless sleep. You will stretch out, think a few moments, sleep a very short time (it will seem) and to-morrow will have come.

Indian school in Banning reservation

CHAPTER XXXIX

The Lure of the Desert



HE desert calls with insistent voice to many and diverse minds. It has a fascination, a charm that grows more potent the more one is subject to its influence. To average persons this attractiveness is a mystery,—the desert to them is everything but attractive. And it cannot be denied that, at times, it is terrible and appalling. It is a giant monster, cruel and bloodthirsty, hungry for men and women, whom it slays as ruthlessly as the giants of a dream slay all who stand in their way. Its mountains are sometimes the restraining, confining walls of a dreadful prison; its springs,—alkali, bitter, and nauseating; its sand plains,—traps for the unwary, where no one can wander without getting lost; its mirages,—devilish contrivances to lure men where, tortured with consuming thirst, they are tantalized to death by visions of living springs that disappear as they seek to drink; while piles of bleaching bones, grinning skulls, and shapeless masses on which revolting vultures are still making their frightful banquets, cry out to the fainting spirits and tell of the fate that awaits and will soon overtake them.

Even a cursory study of the desert reveals a place of tears, a place of sorrows, pains, anguish, and distress, a place of travail and birth, a place of delirium and death. Tears enough have fallen upon it to make a river; the groans and cries of the dying have piled up higher than the surrounding mountains; and curses, loud and heavy, have penetrated deeper than the hidden water supply that flows far under its surface.

So the desert stands before us as a place of contradictions, a place of sharply defined contrasts. In its physical contour and its surroundings this is self-evident. Here as nowhere else are

to be seen and felt the contrasts of height and depth, of light and shadow, of heat and coldness, of barrenness and fertility, of aboriginal man and his most cultivated brother, of primitive agricultural methods and the most advanced. Here are the most prickly trees and shrubs clothed in the most perfect of earthly blossoms, sent by the good God to give the desert hell some of the joy of His floral heaven. Here are the most deadly reptiles clothed in silky and luminous garments of superlative pattern, and animals the swiftest and most agile, as the antelope, deer, mountain lion, and mountain-sheep, and the most slow, as the turtle and the lazy heloderma. In everything the desert stretches wide, expands far, reaches high, descends low. It is all-inclusive, all-embracing, and so it calls forth homage of every thinking and sentient heart that is willing to come under its influence.

In the desert I find myself continually asking the question: Is it a vestal virgin, capable of all the rich beauty and glorious fullness of a completed life, or is it an old woman, worn out, hideous, and ugly, after a life the sweetness and beauty of which have been burned out by evil passions?

Sometimes it seems the one, sometimes the other. In the early morn when all is bright and beautiful, glorious and invigorating, one feels as the morning stars must feel when they sing together in very exuberance at the joy of being, and then, when fierce noontide with its burning, scorching heat falls upon the wearied body, all life seems gone, all vigor, all joy.

At times the desert speaks to the soul and says: Here all is stable and firm. Body, mind, and soul alike can find rest. The mountains are immovable, the canyons are cut forever, the sandy stretches can never change. the desert distances can never be brought nearer. Then comes the whirling sand-storm, the fierce cloudburst, the turbulent and destructive river, the earthquake, and everything in the desert speaks of change. Here is nothing stable. Every created thing must journey on to the goal set by God.

That preacher has not yet appeared on earth who can speak to the human heart as forcefully as the desert speaks. Many a world-famed pulpit orator has given forth many an error, — "the

blind leading the blind," — but the desert never gives out a false note. In its vocal silence it compels every human soul back upon itself, back to God. Then Truth, pure and unadulterated, flows into the empty soul and men become strong as were Moses, Elijah, Jesus, and Mahomet, after their desert experiences.

Then, too, the desert typifies life. It leads you on to know more. Satisfied or dissatisfied, content or discontent, joyous or sorrowful, peaceful or restless, you cannot stop, you cannot cease, you cannot be still. The solitude, full of wild and weird mysteries, beckons to you. The mountains in their grim austerity call you. The canyons in their studious secrecy whet your curiosity. You must see; you must learn; you must know. Though you have suffered in the past, though the journeyings have been full of weary labor, though you have been well nigh parched with thirst, almost dead with fatigue, often lost and oftener distressed with fears of being lost, you are overpowered and overwhelmed with a desire to continue, to search for more, to see, know, experience all there is. *All*, though it be terrible; ALL, though it mean suffering; ALL, though with it comes Death! For there may be that come which will absorb all terror, all suffering, even death itself and make one glad. The heart cries out: "Give it all to me! Let me taste the whole of it. I am a man, a god though in the germ. I will triumph over all earthly things, — things of horror, of terror, of weariness, of exhaustion, of mystery, of joy, of sorrow, of pain, — even death shall be conquered, for within me is Life."

The desert fills one with this passion to know, and in knowing to conquer. Its cry, like that of Life, is irresistible.

In the desert, too, all things seem possible. Here is the primeval chaos out of which the world of beauty and habitation has been made.

Here is the naked *body* of things, and it suggests with terrific force what the naked *soul* of things is. The greatness, the vastness, the chaos, the crudeness, the palpitating power and vitality appeal to one as do trumpet blasts out of an unearthly silence. In gazing on the desert you are gazing at your own undeveloped soul.

And at the same time in the presence of the tremendous sunlight, the awful distances of the stars, the unseeable stretches of the earth, the towering grandeur of the mountains, the vibrating silences, the overwhelming possibilities of the desert, you feel a corresponding enlargement within. Your own soul enlarges to meet these things, and you feel within yourself a tremendous potentiality which may become something noble and grand, even sublime.

For is it not to widen *man* that wide stretch these apparently illimitable plains? Is it not to expand him that everything on the desert is expansive? Is it not to heighten him that the mountain peaks tower to the sky? Is it not to deepen him that precipices yawn, that canyon depths call upon the awe of the human soul?

How earth and heaven meet on the desert! In the far-away blue on the remote horizon the yearning heaven reaches down to the emulous earth, and they become one. So God reaches down and joins himself to man, when the creature, in his noble aspirations, reaches upward to the Creator. Thus man becomes as God, able to do all things, as Christ said he should.

For the desert teaches us that God is no niggard. It gives lavishly and bounteously of all it possesses. The sun is never so brilliant and glorious, and its risings and settings so gorgeous as in the desert. Daily, nightly, entrancing color schemes are presented to the visitor, in a wild prodigality that would be startling were there not so many other prodigal gifts to engage the attention. The sky is never so clear and blue elsewhere, the stars never so luminous and soulful, the breezes never so cooling, calming, and refreshing when evening falls, the sleep never so dreamless, the mind never so clear, the soul never so pure as on the desert.

Is it not possible that one source of the attractiveness of the desert is found in the fact that it seems to echo what often we vaguely feel within ourselves? What vast mysteries are there not hidden in our own breasts, what towering snow-clad mountain peaks of goodness, what deep, dark canyons of evil? And how the storms rage within our own souls! Was there ever a wind-storm or a sand-storm on the desert equal to the storms that sometimes

rage tempestuously within the human heart? And yet, just as men have been impelled to change the adverse conditions of the desert, so the desert calls upon us to change the adverse within our own souls. The sand-hills, the unfruitful soil, the great valley stretches, must be turned into gardens of Eden in which one may walk and talk with God and commune with angelic and human companions. The desolation must be changed into fruitfulness, the horror into beauty, the unrest into peace, the evil into good, the weakness into strength, even as God hath willed from the foundation of the world.

The desert is nothing if it is not sincere. It is sincere to brutality. Open, bare, exposed it lies, and yet it is not dead. It is alive with a fiery aliveness that takes you into its heart and compels you to be as it is, open, frank, sincere. Only then can one know freedom. Of this there is none when one's very self is fettered by the lies, the petty pretenses, the insincerities, the glozings that men and women perpetrate one upon another. Oh, for the freedom of soul that comes from absolute openness, as freedom of the body comes in the desert! And not only freedom of the body. Here the usual channels of one's thoughts lie unused and forgotten, being inadequate to hold the vast floods of spiritual life the desert pours into the receptive soul.

One's ordinary little round of ideas, one's little suppositions, one's little codes, one's little standards are crushed and trampled into nothingness by the tremendous truths the desert forces upon us. It is no respecter of persons, of human ideas, of human platitudes. It bows no knee to human logic or human laws. Its stern, grand face is lifted to the sky in constant search for God himself through the depths of space, and who shall say but that on that face are reflected some of God's greatest truths? Is this not one reason why the desert is such a bringer of peace and life? It gives to us, perhaps unconsciously, the assurance that Life and God are immeasurably greater than man has yet conceived.

This barrier that the desert places between the outer world and itself is a good thing for man. It calls to him to come and share this aloofness. On crossing the line you find yourself in a world where everything is different, entirely new! It is a complete separation, an absolute revocation of all former earth-claims.

The sun is different, so are the sky, the air, the trees, the distances, the clouds, the stars, the odors, the sunrise, the sunset, the mountains, the perspective, the *everything*.

Then there steals into the soul a similar sense of separation. You find a barrier betwixt yourself and many of the things you used to deem essential to your life. They are at once divorced from you. You do not need them, rely upon them, cling to them, as you did yesterday. You find how little you really need, how primitive and simple are the demands made upon you when you do come to the primitive and simple, and as a snake sheds its old and useless skin so you shed your useless garments of body, mind, and soul, of conventionality, artificiality, and unnaturalness. To some people this severance comes as a shock that deadens, a blow that stuns, to others as an arousement, an awakening, an enlargement, and a quickening.

There is no knowing of self in the whirl of cities. There is no solitude, no calm, no rest, no opportunity for deliberate self-appraisement according to the true standards of nature. Everything is conventional, fictitious, unnatural. Men are weighed by their money, their clothes, their geniality, their attainments in the arts and sciences, in business or in popularity, rather than by their character. Then, too, everything is haste. The clang of car-bells, the toot of automobile-horns, the whistle of railway-engines, the hurry, bustle, clangor, confusion of streets, are ever in their ears. There are the theaters, balls, concerts, churches, receptions, lectures, routs, picnics, and parties to aid further in the work of mental distraction. Can one think in such a babel, such a hell? There is little or no real thought in cities. We think we think, but just as city air is ever and always the breathed-over air of the millions and is full of the odors of shambles and markets and gas and decompositions and swill-barrels and alleys and stables, so are the thoughts of men conventional, bounded, set, second-hand thoughts flavored by the odors of tradition, of theology, of this and that and the other, — musty, rusty, moth-eaten, dog-eared, not fit to be mental and spiritual food for living men and women.

So then if you would know yourself, if you would really think, if you would let pure, real thought flow into you freely, get away from the cities. Go out away from man, now and again; ascend

the heights, descend the depths, measure the distances, track the pathless desert, for there, in the still places of God, will your soul learn to know itself and its great and wondrous destiny.

There are many points of similarity between the desert and the ocean. There is the same vastness, the same illimitableness, the same mystery. Yet wonderful differences exist. On the sea all is in motion; the vessels, the waves, the sky, and the stars, all are in apparent if not real motion, full of life and activity. The sea is ever restless, ever striving, ever seeking after that which it has not yet found. But the desert is so full of quietude, of calm completeness, of passionless serenity, that it soothes and calms as the hand of a healthy loving mother soothes her feverish child.

I love the absolute silence of the desert. Here it is no figure of speech to say that, at times, "you can hear nothing but your own heart beat," or "it is a silence that can be felt." Ah, and for how long has it been a silence? From the ages of the past to the now and the yet long distant future.

When one hears nothing but the mad cry of the world, and he is shut in between confining city walls, how his heart cries out for the silence and wide expansiveness of the desert!

How marvelous God's use of silence. He has spoken much in Nature and Revelation, yet it is unquestioned that all His best things are yet unspoken, His best thoughts unknown to man. Hence when men speak of being "natural" and that Nature demands freedom and fullness of expression, would they not do well to remember that silence is both natural and godlike, and that man should aspire to the latter as well as the former? There, golden silence flows out of the heart of the sun, and as it fills the earth with its splendor and sublimity it seems to fill man with the same fiery heat, impetuous ardor, glowing courage, and godlike aspiration that sends the chariot of day speeding each morning across the heavens.

But silence speaks of solitude, and to some persons there is an oppressive sense of sadness wherever human beings are absent. Solitude is so awful to them. It seems as if some dreadful thing had driven humanity away, and therefore the place of solitude is filled with vague, mysterious, but nevertheless potent fears.

What human being is there who has not felt the desolation of

loneliness, the sorrow and pain of solitude, the aloneness that comes at times, even when mingling with the madding crowd, and that makes us feel the aloofness of our own soul? Is not one secret of the power of the desert found in its almost visible personification of this feeling? It is the forsaken, the desolate, the solitary, the alone, and without knowing it, we pity ourselves in pitying the majesty of its aloofness. Some men flee to solitude through bitterness of spirit, through hatred of the world, because of disappointment, blight, or sorrow. Others go because in the vastness of the desert the spirit finds freedom and enlargement, and hence peace.

Sit with me now on a mountainside looking over the desert. The moon is rising. Below me, standing in awesome silence, are the hundreds of giant palms, their age telling me they should be sere, yellow, and hoary, yet their green and graceful crowns speaking of an aspiring youth that nothing can age. Beyond is the plain, sandy and strewn with boulders, dotted here and there with mesquite and lesser trees and shrubs. Farther away, like recumbent forms of sleeping monsters, rise the spurs of the giant mountains, which, leaping at once to the heavens, form steps for man to ascend and gods to descend. All are touched with the melancholy radiance of the moon. It is not a great blood-red orb, but a dainty, gentle presence, a silvery crescent that comes in maiden modesty to diffuse sweet and pure beauty on every hand. Everything is touched as with luminous primrose and silver. The silence of the desert is accentuated by the thousand and one sounds that tell of the things that do not sleep by night, — the gentle breeze playing quietly with the leafy mysteries of the palms, the rustling of tiny creatures in the sand, the occasional croak of a frog, or chirp of a cricket, and once in a while the perfect flood of melody from a love filled mocking-bird. How small and insignificant and unneeded man feels in such presences and at such a time! Without him or with him these things are just the same. He neither helps nor hinders, neither calls forth nor restrains. There are some things, thank God, that man cannot meddle with, improve, nor mar. They refuse to be civilized and will forever remain as examples of what can be achieved without his aid or interference.

So, alone, save for the all-embracing presence of God we lie down to sleep, content and peaceful as was the poet when "rocked in the cradle of the deep."

People who sleep indoors do not know what they miss. Think of sleeping within four solid walls, windows closed, blinds drawn, doors shut, and "cribb'd, cabin'd, confin'd" in a space 12 by 14 or so! Then compare this with the elastic walls of God's own desert solitudes, no windows, no doors, no blinds, and the ever moving winds playing with your hair, kissing your cheek, whispering sweet things in your ears, bringing sweet odors one after another to your senses, and then, with soft, soothing, mesmeric touch quieting all nervousness, stilling all alarm, quenching all fever, and tranquilizing all mental excitement so that sweet sleep falls upon you as easily and unconsciously as night falls upon day. Then if, during the night, the mocking-bird wakes you to listen to his exuberant song of love to his mate, as you listen you look up into the peerless abyss of pure turquoise where float liquid stars and feel their power as never before. Stars stir varying emotions in the human heart according to human moods. Sometimes they oppress one with their mystery, their vagueness, their far-away calmness as if they mocked all the efforts of puny man to know more of them. Sometimes they awaken such intense longings, such terrible aspirations, that human nature can scarce contain them, but to me they oftener bring a sympathetic presence of a supreme and loving power, a nearness of the Divine, the soft, sweet eyes of a loving but all powerful Father gazing with protecting care over me. To know and feel all these things is worth all the luxurious sleeping-chambers of all the ages. To know the joy of being enfolded in the tender yet strong, sympathetic yet stimulating, soothing yet arousing influences of all out-of-doors at night is worth all the soft and voluptuous couches of every king and czar that ever lived.

INDEX

A

Agua Caliente, 103, 446.
Agua Dulce, 50, 235, 443.
Alamo Botina, 235.
Alamo Mocho, 10, 62, 63, 106, 108, 255.
Alamo River, 6, 16, 29-32, 49, 50, 56, 60-62, 152, 165, 358, 493.
Alamos Bonitos, 453.
Algodones Ranch, 117, 412, 413.
Allan's Camp, 464.
Amador, Rafael, 97.
"American Girl" Mine, 299.
Ames, mine prospector, 318, 319.
Anaconda Mine, 314.
Anaheim, 304.
Anastasio, 242.
Anderson, General, 117.
Andreas Canyon, 269, 292-297, 385.
Anschultz, "Charley," 266.
Arizona Experiment Station, 58.
"Army of the West," 105, 253.
Austin Mine, 299.

B

Badger Lake, 63.
Bailey, Vernon, 194, 325.
Bale, Sergeant, 342.
Banning, 38, 214, 234.
Barney, B. B., 462.
Barrows, Dr. D. P., 246.
Bartlett, J. R., 62, 67, 106-108, 253, 341.
Basins of the Desert: Big, 480; Desert, 68; Maquata, 27.
Beale, Lieutenant E. F., 105.
Bean, General, 121.
Bear Valley Water Company, 66.
Beatty, John C., 354, 355.
Beltran Slough, 64, 65.
Bierce, Ambrose, 152.
Big Basin, 480.
Bill Williams River, 58.
Birds of the Desert, 157-168.
Black Canyon, 53.
Blake, Professor William P., xxii, 28, 83, 110, 111, 125, 126, 265, 361.
Blue Lake, 63.
Bodie Mine, 299.
Botsford, prospector, 318.
Boulder Canyon, 53.
Brawley, 50, 63, 360, 363.
Breedloves, 343.
Brooklyn Mine, 210, 317-322, 434.
Brown, explorer, 488.
Browne, J. Ross, 9, 258, 354.
Bucareli, Viceroy, 93.
Bull Frog Mine, 299.
Burbank, Luther, 224.
Burch, James, 114, 254.
Burnett, Governor, 121.
Burro, The, on the Desert, 397-401.

Burt, John, miner, 318.
Burt's Lake, 319.
Butterfield Overland Mail, 255-257; Stage-coach Line, 114.

C

Cabazon, 235.
Cajon Pass, 75.
Calexico, 22, 50, 56, 61, 64, 363.
California Audubon Society, 167.
California Development Company, 32, 49, 50, 55, 61, 63, 503.
Cameron Lake, 16, 64, 253.
Camp-fires of the Desert, 345-362.
Campo, 332, 405.
Canyons of the Desert: Andreas, 269, 292-297, 385; Black, Boulder, Cataract, 53; Chino, 75, 76, 269; Cottonwood, 430; Deep, 456-461; Desolation, 53; Devil's, 409; Echo, 53; Falls Creek, 76; Flaming Gorge, Glen, Grand, Gray, Gypsum, Horseshoe, Iceberg, Kingfisher, Labyrinth, Lodore, 53; Lukens, 385; Marble, 53; Martinez, 240, 437; Murray, 269, 297, 298; Narrow, Painted, 53; Palm, 76, 154, 266, 269, 385; Pinion, 484; Pyramid, 53; Rock House, 441, 442; Santa Ana, 73; Split Mountain, Stillwater, 53; Tauquitch, 269; Virgin, 53; West, 277; Whirlpool, 53.
Cardenas, 50.
Carrizo, 9, 10, 16, 18, 101, 103, 107, 108.
Carrizo Creek, 13, 67, 449.
Carson, Kit, 105.
Carter, J. E., 487.
Castle Dome, 13.
Cataract Canyon, 53.
Central Overland California and Pike's Peak Express, 258.
Chaffee, irrigationist, 507.
Charles, Frances, 474.
Chemehuevis Indians, 22, 233, 477.
Chino Canyon, 75, 76, 269.
Chocolate Mountains, 39, 40, 72, 139, 142, 172, 345, 355-362.
Chuckwalla Mountains, 72, 172, 185, 213, 258.
Clark Mine, 314.
Clarke Ranch, 445.
Coachella, 365.
Coachella Valley, 5, 11, 16, 21, 27, 43, 50, 67, 215, 234, 237, 264, 364-371.
Coahuilla Indians, 22, 264, 289, 393, 477.
Cocopah Indians, 1, 2, 56, 233, 238.
Colorado Chiquita, 58.
Colorado Desert, xxii-xxxvi.
Colorado River, 49 *et seq.*
Colorado River Exploring Expedition, 373.
Colorado River Ferry, 117.
Colorado River Irrigation Company, 354.
Colors of the Desert, 139-144.
Colton, 1.
Comstock Mine, 314.
Consag, Father, 29.
Cooke, Captain P. St. George, 104, 253, 347.

Cookes Wells, 10, 29, 412.
Copper Queen Mine, 314.
Corona, 76, 77.
Cortés, 88, 89.
Cottonwood, 266.
Cottonwood Canyon, 430.
Cottonwood Mountains, 72.
Coulter, Dr. Thomas, 97.
Cover, Thomas, 306.
Coville, Frederick Vernon, 137, 224-229.
Covington, William, 333.
Cox, E. T., 198, 199.
Coxcomb Mountains, 72.
Coyote Wells, 410.
Craig, Colonel, 341-343.
Crawford Valley, 171, 210, 215.
Creeks: Carrizo, 13, 67, 449; Salt, 13, 16, 58.
Cucamonga Mountains, 75.
Cumana Indians, 90, 91.
Cuyamaca, 71-80, 150.

D

Dalzura, 404.
Date-Palm Culture on the Desert, 383-396.
Davis, Jefferson, 110, 112, 253.
De Alarçon, Pedro, 50, 54, 89, 90.
De Anza, Captain Juan Bautista, 93.
De Benivedes, Fra Alonso, 150.
De Courcey, Dr., 305.
De Guzman, Nuño, 89.
De Niza, Marcos, 89.
De Oñate, Juan, 91.
De Ulloa, Francisco, 89.
De Vaca, Cabeza, 89.
Death Valley, 75, 346.
Deep Canyon, 456-461.
Denton, 194.
Desert Basin, 68.
Desert Surprises, 33-48.
Desert Tenderfoot, Suggestions for the, 521-525.
Desolation Canyon, 53.
Devil's Canyon, 409.
Devil's Garden, 189.
Diamond Lake, 63.
Diaz, Melchior D., 55, 90.
Dieguienos Indians, 234.
Ditmars, Professor R. L., 182, 183, 192, 194.
Dollar Lake, 73.
Donner Lake, 346.
Dooner, P. W., 258-260.
Dorsey, Senator Stephen, 300.
Dos Palmas, 423, 427.
Downey, Governor, 303, 304.
Durazno Valley, 445.
Durbrow, George, 505.

E

Eagle Mountains, 72, 172.
Echo Canyon, 53.
Eggeling, Otto, 195.
Ehrenberg, 258, 422, 423.
El Centro, 50, 363.
El Dorado, 483.
"El Dorado," Bayard Taylor's, 109, 110.
El Monte, 255.
El Morro, 292.
Emory, Colonel W. H., 98-103, 111, 254.
Esmeralda Mine, 249.

Eureka Mine, 249.
Eytel, Carl, xxxvii-xliv, 137, 196, 220, 264, 265, 281.

F

Fages, Don Pedro, 96.
Fairchild, David G., 390, 391.
Falls Creek Canyon, 76.
Fig Tree John's, 19, 251, 252.
Figueroa, Governor, 97.
Fish Springs, 452.
Fiske, John, 264.
Fitch, George Hamlin, 289.
Flaming Gorge Canyon, 53.
Florida, 463.
Flowing Wells, 305.
Font, Padre, 93.
Forbes, Professor R. H., 388.
Frazer, Professor, 102.
Frink, 13, 133.
Funeral Mountains, 75.

G

Gadsden Purchase, 106, 253.
Garcés, Padre Francisco, 50, 92, 93-95, 414.
Garden of Eden, 473.
Gardners, 10.
Garnet Queen Mine, 443.
General View of the Desert, 1-22.
Gila River, 58, 59, 104, 109, 117.
Glanton Ferry, 118-122.
Glen Canyon, 53.
Glover, George W., Jr., 161, 162.
Goldfield Mine, 249.
Goldhill Camp, 299.
Gold Park, 482.
Goth Brothers, 375, 376.
Graham, Colonel, 222.
Grand Canyon, 53.
Grand River, 52.
Granite Mine, 155, 434.
Gray, Dr. Asa, 220.
Gray Canyon, 53.
Great and Little Bear Valleys, 73, 106.
Green River, 52.
Grinnell, Mrs. Elizabeth, 191.
Grinnell, Professor Joseph, 157, 158, 292.
Gripton, explorer, 488.
Guadaloupe Hidalgo, 106.
Guinn, J. M., 113, 114, 255.
Gypsum Canyon, 53.

H

Hall, Professor H. M., 465, 468.
Hamilton Mine, 249.
Hanks, Professor, 82, 83.
Hanlon's Ranch, 241.
Hardy, R. H. W., xxvi, 50.
Hardy's Colorado River, xxviii, 63.
Havasu River, 58.
Hay, Dr. O. P., 193, 194.
Hayfields, 171, 172.
Heber, 50, 363.
Hedges Mine, 299.
Hefferman, Dr., 355.
Heintzelman, Major, 83, 112.
Hemet, 464.
Hersey Mine, 483.
Hesperia, 478.
Hickey's Ranch, 421.
Hijar, Don José Maria, 98.
Hill, Jeremiah, 119.
Hill's Valley, 405, 406.

Holder, Professor C. F., 95.
Holtville, 50, 363, 495.
Hooper-Whiting Company, 258.
Hopi Indians, 92.
Horn, Dr. G. H., 201, 202.
Horseshoe Canyon, 53.
Horticultural Possibilities of the Desert, 373-381.
Hubbard, H. G., 202, 203.
Hutchins, Chinese inspector, 408.
Huxley, 188.

I

Iceberg Canyon, 53.
Imperial, 7, 13, 50, 200, 363.
Imperial Valley, 6, 9, 13, 21, 26, 28, 49, 61, 267, 362, 365.
Imperial Water Company, 357, 508.
Indians of the Desert, 233-252; Cahuillas, 22, 264, 289, 393, 477; Cocopahs, 1, 2, 56, 233, 238; Chemehuevis, 22, 233, 477; Cumanas, 90, 91; Dieguienos, 234; Hopis, 92; Mohaves, 56, 98; Pimas, 92, 153; Paiutis, 233; Sabobas, Santa Rosas, 213; Serranos, 234, 477; Yumas, 21, 56, 91, 97, 117, 234, 238, 477.
Indian Wells, 10, 411, 455.
Indio, 4, 5, 11, 13, 16, 21, 24, 31, 42, 50, 66, 135, 253, 258, 365, 366, 485.
Iron Chief Mine, 266.
Irrigation Company, 508.
Ives, 50.

J

Jackson, Helen Hunt, 465.
Jackson, leader of expedition, 96.
Jacumba Ranch, 406.
Jasper, James A., 332.
Johnson, Bernard G., 387.
Johnson, Fred N., 377-381.
Jones, Senator J. P., 300.
Jones, Commissioner W. A., 446.
Jordan, Mrs., the Aunt Ri of "Ramona," 463.
Juan Jack Bonito Ranch, 421
Judson, explorer, 488.

K

Kearney, General, 96, 98, 104, 347, 447.
Kearney, Thomas H., 391.
King, Clarence, 1, 81, 115, 132, 133.
Kingfisher Canyon, 53.
Kino, Padre, 92.

L

Labyrinth Canyon, 53.
La Cueva, 76.
Laguna, 49, 332.
Lakes: Badger, 63; Blue, 63; Burt's, 319; Cameron, 16, 64, 253; Diamond, 63; Dollar, 73; Donner, 346; Le Conte, 326; Pelican, 63; Volcano, 19, 63, 65.
Lamy, Engineer George L., 76.
Lea, missionary to the Yumas, 488.
Le Conte, Dr. J. L., 83, 208, 326.
Le Conte Lake, 326.
Limon, Ensign, 95.
Lincoln, Dr. A. L., 117.
Little Paradise Valley, 466.
Lodore Canyon, 53.
Lomas, Augustin, 240.

Lomas, Poncho, 239, 240, 244.
Long Beach, 77.
Long's Peak, 52.
Los Angeles Chamber of Commerce, 334, 335.
Lost Horse Mine, 479.
Lukens Canyon, 385.
Lure of the Desert, 527-535.
Lyon's Peak, 79.

M

Maguire, Pete, 59.
Mailliard, Joseph, 157.
Mammoth, 267.
Manhattan Mine, 249.
Maquata Basin, 27.
Marble Canyon, 53.
Markham, ex-Governor H. H., 299.
Martinez, 50, 219, 235, 237, 239-252, 268, 453.
Martinez Canyon, 240, 437.
McCallum, Judge, 283.
McCoy's Springs, 377.
McFee's Ranch, 421.
McGuire Expedition, 304.
McKane Family, 406, 407.
Mecca, 4, 5, 11, 21, 24, 25, 50, 67, 149, 160, 169, 237, 266, 268, 363, 365, 366.
Meccaroni River, 67, 68.
Mellen, Captain, 51.
Mendoza, Viceroy, 55, 89.
Mesquite Land, 11, 22, 219, 453-462.
Mexicali, 50, 56, 64, 363.
Mexican Boundary Commission, 222, 230.
Mexican Company, 355.
Michler, Lieutenant, 254.
Milpitas, 418.
Mines of the Desert: "American Girl," 299; Anaconda, 314; Bodie, 299; Brooklyn, 210, 317-322, 434; Bull Frog, 299; Clark, Comstock, Copper Queen, 314; Esmeralda, Eureka, 249; Garnet Queen, 443; Goldfield, 249; Granite, 155, 434; Hamilton, 249; Hedges, 299; Hersey, 483; Iron Chief, 266; Lost Horse, 479; Manhattan, 249; Pegleg Smith, 13, 300-309; Randsburg, Tonapah, Tuscarora, 249.
Mining Committee of the Los Angeles Chamber of Commerce, 266.
Mining Company, "Seal of Gold," 319.
Mirages and Desert Illusions, 130-138.
Mission Creek Valley, 477.
Mitchell, Dr. Weir, 176.
Mohave, 23, 27, 51, 54, 186, 206.
Mohave Indians, 56, 98.
Monterey, 93, 94.
Moore, Captain, 100.
Moravian Mission, 251.
Morehead, General Joseph C., 121.
Morongo Pass, 81, 477.
Morris, Madge, 152, 211.
Mortmere, 237, 267, 514.
Mountains of the Desert: Chocolate, 39, 40, 72, 139, 142, 172, 345, 355-362; Chuckwalla, 72, 172, 185, 213, 258; Cocopah

Range, 108, 133, 134, 150; Cottonwood, 72; Coxcomb, 72; Cucamonga Peaks, 75; Eagle, 72, 172; Funeral, 75; Long's Peak, 52; Lyon's Peak, 79; Palomar, 150; Pinto, 72; San Antonio, 75; San Bernardino, 2, 3, 7, 20, 23, 26, 44, 66, 71-80, 134-136, 140, 165, 235; San Fernando, 75; San Gorgonio, 66, 71-80, 142, 234, 469; San Jacinto, 3, 4, 7, 9, 26, 27, 37-40, 66, 71-80, 142, 149, 165, 239, 269; San Miguel, 79; Santa Rosa, 150; Sierra Madre, 75; Sierra Prieta, 83; Sierra Santa Inés, 75; Signal, 13, 134; Smith, 302-305; Superstition, 13; Tauquitch Peak, 233, 465; Tecarte, 405; Thomas, 465; Torres, 50, 150, 235; Wind River, 52.
Mountain Meadow massacre, 346.
Muir, John, 150, 211.
Murray, Dr. Wellwood, xxx, 280, 297, 341, 393.
Murray Canyon, 269, 297, 298.
"Mystic Mid Region," Burdick's, 328.

N

Narrow Canyon, 53.
Needles, 55, 56.
Nelson, N. O., 519.
Newbury, Dr., 373.
New Liverpool Salt Company, 326, 328, 504.
New River, 6, 16, 26, 29-32, 50, 56, 61-67, 357, 504.
Nombre, Francisco, 239.

O

Ocean of Calm, 75.
Ogilby, 201, 299.
Ontario, 77.
Ormega, Ignacio, 251.
Oro Copia Mining Company, 427.
Overland Mail Company, 9.

P

Painted Canyon, 53.
Paiuti Indians, 233.
Pala, 322, 446.
Palm Canyon, 76, 154, 266, 269, 385.
Palm Springs, 11, 13, 21, 25, 37, 67, 157, 172, 204, 234, 258, 277-298, 374.
Palm Springs Station, 37, 253, 471.
Palma, Chief, 93.
Palmdale, 291, 462.
Palo Verde, 418-420.
Palomar Mountains, 150.
Parke, Lieutenant, 111.
Parker, 21.
Parsons, George W., 266, 334.
Passes of the Desert: Cajon, 75; Morongo, 81, 477; San Felipe, 97, 221, 253, 448; San Gorgonio, 1-4, 7, 11, 13, 17, 25, 37, 40, 44, 61, 189, 253, 254.
Patton, H. W., 487.
Pedro, Juan, 251.
Pedro, medicine-man, 290.
Pegleg Smith Mine, 13, 300-309.
Pelican Island, 13, 83, 518.
Pelican Lake, 63.
Perris Indian School, 340.
Perry, C. N., 508.

Physical History of the Desert, 23-32.
Picacho, 13, 21, 300, 415-418.
Pico, Andreas, 98.
Pilot Knob, 8, 13, 27, 81, 215, 515.
Pima Indians, 92, 153.
Pinion Canyon, 484.
Pinto Mountains, 72.
Pinto Valley, 212, 265.
Plant Life on the Desert, 207-232.
Polhamus, Captain, 51.
Pomona, 77.
Poston, Charles D., 258.
Potrero Village, 234, 404.
Powell, Major, 26, 49, 50, 353, 354.
Prescott, 258.
Producers' Association, 368.
Prospecting and Mining in the Desert, 299-330.
Pyramid Canyon, 53.

Q

Quin, Sergeant, 342.

R

Ranches of the Desert: Algodones, 117, 412, 413; Clarke, 445; Hanlon's, 117; Hickey's, 421; Jacumba, 406; Juan Jack Bonito, 452; McFee's, 421; San Felipe, 448; Thomas, 464, 465; Vandeventer, 443, 466; Warner's, 103, 253, 255, 258, 303, 446; Wentworth, 445, 446; Whitewater 475.
Randsburg Mine, 249.
Read, J. P., 323.
Reclamation of the Desert, 353-371.
Reflooding the Colorado Desert, 271-276.
Reptiles and Insects of the Desert, 169-206.
Riley, 346.
Rio del Tizon, 55.
Rio Padrones, 493.
Rio Paredones, 63, 64.
Rivera, Governor, 95.
Rivers of the Desert, 49-67; Alamo, 6, 16, 29-32, 49, 50, 56, 60-62, 152, 165, 358, 493; Bill Williams, 58; Colorado, 49 *et seq.*; Hardy's Colorado, xxvi, 63; Cila, 58, 59, 104, 109, 117; Grand, Green, 52; Havasu, 58; Meccaroni, 67, 68; New, 6, 16, 26, 29-32, 50, 56, 61-67, 357, 504; Rio del Tizon, 55; Rio Padrones, 493; Rio Paredones, 63, 64; San Juan, 58; Whitewater, 10, 16, 46, 66, 67, 269.
Rock House Canyon, 441, 442.
Rockwood, Engineer C. R., 32, 61, 354, 506, 507.
Rust, Major, 240.
Ruthven, 13.

S

Saboba Indians, 213.
Salt Creek, 13, 16, 58.
Salton Sea, 5, 7, 11, 13, 16, 19, 26, 27, 31, 38, 43, 134, 142, 154, 164, 186, 221, 264, 324-326, 503-518; Yuma to the, 487-501.
Salton Sink, 5.
Salt-works, 428.
San Antonio Mountains, 75.

San Bernardino Mountains, 2, 3, 7, 20, 23, 26, 44, 66, 71-80, 134, 136, 140, 165, 235.
San Diego, 13, 17, 26, 107, 253.
San Diego and San Antonio semi-monthly stage line, 254.
San Diego to Yuma, a trip from, 403-414.
San Felipe Pass, 97, 221, 253, 488.
San Felipe Ranch, 448.
San Fernando Mountains, 75.
San Gabriel, 94-96, 253.
San Gorgonio Mountains, 66, 71-80, 142, 234, 469.
San Gorgonio Pass, 1-4, 7, 11, 13, 17, 25, 37, 40, 44, 61, 189, 253, 254.
San Jacinto Mountains, 3, 4, 7, 9, 26, 27, 37-40, 66, 71-80, 142, 149, 165, 239, 269.
San Juan River, 58.
San Luis Rey, 97, 253.
San Miguel Mountains, 79.
San Pasqual, 98, 253.
San Xavier del Bac, 92.
Santa Ana Canyon, 73.
Santa Anna, 97.
Santa Barbara, 220.
Santa Fé Railway, 55.
Santa Rosa, 443.
Santa Rosa Indians, 213.
Santa Rosa Mountains, 150.
Sebastian, 93.
Serra, Padre Junipero, 215.
Serranos Indians, 234, 477.
Seven Oaks, 73.
Seven Wells, 64, 493.
Sharps, 61, 64, 494.
Shaver, 266, 430.
Sherman School, 340.
Sierra Madre, 75.
Sierra Prieta, 83.
Sierra Santa Inés, 75.
Signal Mountain, 13, 134.
Sign-boards of the Desert, 331-335.
Silsbee, 50, 363.
Simpson, General J. H., 90.
Smith, Jedediah, 98.
Smith Mountain, 303-305.
Smith, Thomas L., 98.
Smythe, William E., 361.
Sonora, 96, 99, 109, 253.
Sonoranian migration, 61, 117, 118.
Southern Pacific Railway, 115, 122, 237, 268, 278, 363, 508.
Split Mountain Canyon, 53.
Springs of the Desert: Fish, 452; McCoy's, 337; Palm, 11, 13, 21, 25, 37, 67, 157, 172, 204, 234, 258, 277-298, 374.
Stage Line Across the Desert, 253-262.
Standard Salt Company, 328.
Stanton, 50.
Stejneger, Leonard, 175.
Stillwater Canyon, 53.
Storms of the Desert, 123-130.
Strawberry Valley, 76.
Stubenrauch, A. V., 392.
Superstition Mountain, 13.
Swingle, Dr. Walter T., xxii-xxx, 387-389, 391, 392.

T

Tauquitch Canyon, 269.
Tauquitch Peak, 233, 465.

Tecarte Mountain, 405.
Tejon, Fort, 112.
Temecula, 255, 302.
Thermal, 50, 365.
Thomas Mountain, 465.
Thomas Ranch, 464, 465.
Tingman, "Ananias of the Desert," 349-352.
Tonapah Mine, 249.
Torres, 453.
Torres Mountain, 50, 150, 235.
Torrey, Dr., 102.
Toumey, Professor James W., 388.
Tragedies of the Desert, 337-344.
Tubac, 253.
Tucson, 253, 478.
Turner, Captain, 100.
Tuscarora Mine, 249.
Twenty-Nine Palms, 316, 479, 482.
Tyndall, Professor, 137.

U

United States Reclamation Service, 503.

V

Vallecita, 107, 256, 448.
Valleys of the Desert: Coachella, 5, 11, 16, 21, 27, 43, 50, 67, 215, 234, 237, 264, 364-371; Crawford, 171, 210, 215; Death, 75, 346; Durazno, 445; Great and Little Bear, 73, 106; Hill's, 405, 406; Imperial, 6, 9, 13, 21, 26, 28, 49, 61, 267, 362, 365; Little Paradise, 466; Mission Creek, 477; Pinto, 212, 265; Strawberry, 76.
Vandeventer Ranch, 443, 466.
Van Anderson, 488.
Van Denburgh, 185, 193.
Van Dyke, Dr. John C., 210.
Van Dyke, T. S., 162, 163.
Veatch, Dr., 84-86, 150, 221, 373, 504.
Vermilion Sea, 30.
Virgin Canyon, 53.
Virginia City Camp, 299.
Volcano, 13.
Volcano Lake, 19, 63, 65.
Vosburgh, J. L., 260, 261.

W

Wagner, Mrs., 152.
Waldo, leader of expedition, 96.
Warner, Jonathan Trumbull, 96.
Warner's Ranch, 103, 253-255, 258, 303, 446.
Warren, Chuck, 478, 479.
Wayne, Major, 112, 113.
Water on the Desert, 263-270.
Wells of the Desert: Cookes, 10, 29, 412; Coyote, 410; Flowing, 305; Indian, 10, 411, 455; Seven, 64, 493.
Wentworth Ranch, 445, 446.
West Canyon, 277.
Wheaton, Professor, 291.
Whirlpool Canyon, 53.
Whitewater, 4.
Whitewater Ranch, 475.
Whitewater River, 10, 16, 46, 66, 67, 269.

Whiting, Dr. C. A., 181.
Widney, Dr. J. P., 271-276.
Wild Animals of the Desert, 145-156.
Williamson, Lieutenant, 72, 254.
Wilson, Charley, 482.
Wilson, Quartz, 418.
Wind River Mountains, 52.
Woods, I. C., 114, 254.
Wozencraft, Dr. O. M., 354.
Wright, W. G., 201, 204.

Y

Yaeger, mine prospector, 318, 319.
Yaeger, Diego, 122.
Young, leader of expedition, 96.
Yuha Plain, 16, 18.
Yuma, 3, 7, 10, 13, 17, 49, 55, 59, 107, 134, 200, 215, 254, 258, 272, 374; to Salton, a tramp from, 415-428.
Yuma Indians, 21, 56, 91, 97, 117, 234, 238, 477.

Books by George Wharton James

In and Out of the Old Missions of California

An Historical and Pictorial Account of the Franciscan Missions. With one hundred forty-two illustrations, including full-page plates, from photographs. 8vo. Cloth. $3.00 net.

THE present volume stands as the authority on the old missions of California. Indispensable as a guide-book, and is filled with most valuable material. — *San Francisco Argonaut.* The author has devoted careful study to the matter of architecture, and to the furniture and decorations of the historic and ancient structures; but, in addition to this, the work is made interesting by the relative matters that have a more human interest. — *St. Louis Globe-Democrat.*

The Story of Scraggles
A Song Sparrow

Illustrated by Sears Gallagher and from photographs. 12mo. Cloth. $1.00.

SCRAGGLES was a little song-sparrow that Mr. James found weak, crippled, and unable to fly. He took the little bird to his home and it became his constant companion, perching on his foot and nestling in his hand, while he was writing his book "In and Out of the Old Missions of California." The dedication of that book led many people to write to the author expressing a desire to know more of the story of "Scraggles." In this story, which Mr. James has now tenderly and faithfully told, is described an unusual instance of a friendship between man and one of the lower animals.

LITTLE, BROWN, & CO., *Publishers*
254 WASHINGTON STREET, BOSTON

Other Books by George Wharton James

In and Around the Grand Canyon of the Colorado River in Arizona

Illustrated with twenty-three full-page plates and seventy-seven pictures in the text. 8vo. Cloth. Price, $2.50

THE volume, crowded with pictures of the marvels and beauties of the Canyon, is of absorbing interest. Dramatic narratives of hairbreadth escapes and thrilling adventures, stories of Indians, their legends and customs, and Mr. James's own perilous experiences, give a wonderful personal interest in these pages of graphic description of the most stupendous natural wonder on the American Continent. — *Philadelphia Public Ledger.*

The Indians of the Painted Desert Region

With sixteen full-page pictures and fifty half-page illustrations from photographs. Crown 8vo. Decorated cloth. $2.00 *net*

"INTERESTING as a fairy tale and valuable for its accuracy as well" (*Literary News*), and "a distinct and extremely interesting contribution to topographical and ethnological knowledge" (*Buffalo Commercial*), is this book by Professor James, in which he vividly describes the Navaho, Hopi, Wallapai, and Havasupai Indians of the Southwest. "The writer has made an intimate personal acquaintance with his subject and has grounded himself in the researches of others," says the *New York Tribune.*

LITTLE, BROWN, & CO., *Publishers*
254 WASHINGTON STREET, BOSTON

3 2044 058 249 657

THE BORROWER WILL BE CHARGED AN OVERDUE FEE IF THIS BOOK IS NOT RETURNED TO THE LIBRARY ON OR BEFORE THE LAST DATE STAMPED BELOW. NON-RECEIPT OF OVERDUE NOTICES DOES NOT EXEMPT THE BORROWER FROM OVERDUE FEES.

CANCELLED
WIDENER
JUN 1 9 1984
795190

WIDENER
FEB 2 5 2002
MAR 1 8 2002
CANCELLED